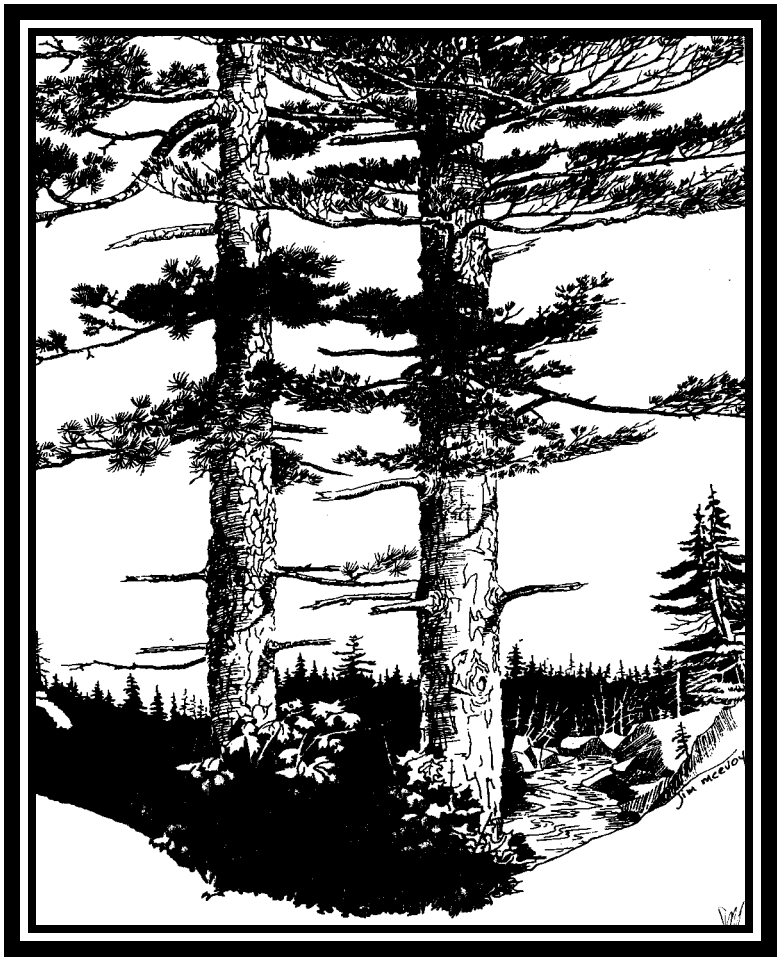
Brule River State Forest
Master Plan Revision

Preferred Alternative



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WISCONSIN
DEPT. OF NATURAL RESOURCES

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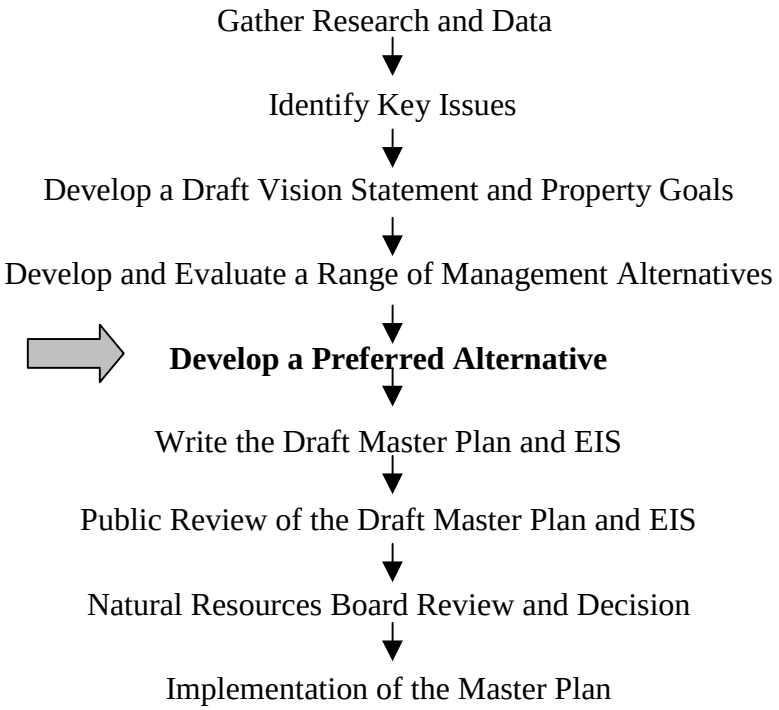
Introduction to the Preferred Alternative

Development of the Preferred Alternative

The purpose of developing a "Preferred Alternative" is to create a step between the completion of the Alternatives and the Draft Master Plan. It provides an additional opportunity for public tribal and other governing body review and input. The master planning process diagram below illustrates how the Preferred Alternative fits into the overall process.



Another way to think of the Preferred Alternative is as a "broad brush," preliminary version of the Draft Master Plan. It contains some options that address specific areas or topics on which opinions remain divided. We will continue to refine the developing master plan based on public comment and staff review we receive on the Preferred Alternative and the review of the Draft Master Plan.

The Preferred Alternative has been developed based on the previously developed range of Alternatives (also referred to as Resource Management Concepts 1-4 and Recreation Management Concepts A-D). These Alternative Concepts were presented and described in detail in the Progress Report 8 mailing. Copies are available on our web site: www.dnr.state.us/master_planning/Brule, or upon request by phone (715) 365-8993.

The Preferred Alternative adds an additional level of detail. It identifies smaller, more distinct areas within the forest than in the previous Alternative Concepts. It also applies one of the land management classifications described in the Wisconsin Department of Natural Resources (WDNR) Master Planning Administrative Code NR 44 to each of these management areas along with management objectives and prescriptions.

Land areas within the Brule River State Forest were divided into management areas with similar ecological capabilities or other physical characteristics. Short and long range management objectives were developed for each of these management areas. Each area was considered as a component in the overall management of the property.

Once the management objectives and a general description of the proposed management were established, a Land Management Classification was assigned to each management area that most accurately fit the management prescribed for the area.

As in previous steps in the development of the master plan, WDNR received input through public meetings and correspondences from individuals, interest groups / organizations, tribal representatives and other governing bodies. These comments were all taken into consideration in the development of the Preferred Alternative, along with the opinions of DNR's team of experts and other criteria described below. Public input on the Alternatives was received in a series of public meetings held in the town of Brule and other locations statewide. DNR staff also consulted with tribal representatives on several occasions in order to receive input on the Alternative Concepts. A summary of the input received on the Alternative Concepts is included in Progress Report 9, which is available through the sources indicated above.

The Brule River State Forest Superintendent made contact with state and local elected officials regarding the master plan Alternatives. They or their staff members were provided DNR literature describing the range of alternatives, updated regarding the process and invited to participate. All parties appeared to be pleased with progress being made and wished to be kept informed. No formal comments were offered.

Other key criteria and considerations applied to the development of the Preferred Alternative included:

- the technical input from WDNR staff experts
- the Draft Vision Statement and Property Goals
- the Northern Forest Assessments and the Biotic Inventory
- the resulting Regional Analysis
- the statutory requirements for a state forest
- the evaluation of the environmental impacts of the alternatives
- other available scientific information

The input on the Alternative Concepts appeared to support elements from several of the Alternatives. In order to reflect this input, WDNR staff considered the criteria described above and selected elements from one or more of the Alternatives that appeared to receive general support from our staff experts, public participants, tribal representatives and other governing bodies. These elements were then combined into a single Preferred Alternative.

The Preferred Alternative "Options"

The input on the Alternatives also indicated that there were several topics, on which opinions remained divided. Therefore, the Preferred Alternative includes "options" for several of the Land Management Classification Areas. These options have been developed to reflect the areas and management actions where we would like additional public input.

In general, public opinion differs on the following key issues:

- The appropriate type, location, and level of timber harvesting that should be performed, in consideration of:

- the protection of the water quality of the Brule River and its tributaries.
- forest management goals for forest health, generation of forest products and fire management.
- the management priority for rare species.
- the health and biodiversity of ecological communities.
- the restoration of "old growth" forest.
- the preservation of the scenic quality in visually sensitive areas of the forest.
- the extent to which timber harvesting should be used as a tool in the restoration of the "boreal forest" community in the Lake Superior Clay Plain.
- the management techniques that should be used to restore the "pine barrens" community.

- The appropriate level of recreational use on the river and the methods that should be used to resolve this and related problems.

- The appropriate level of management for wildlife habitat to provide habitat to support specific species of plants or animals.

For a more detailed description of the input received on the Alternative Concepts, refer to Progress Report 9.

DNR staff experts have indicated which option they believe to be "preferred" based on the supporting data and other criteria. The description of the options is followed by a comparison and evaluation of each. In some cases there is not definitive support for one option over another. In these cases neither option was indicated as preferred. The final decision on which option will be included in the Draft Master Plan will be made based on the input received, expert staff input and the supporting scientific data. Based on further examination and discussion, we hope to arrive at general agreement on these issues.

The following section describes the Land Management Classification System included in WDNR Master Planning Rule NR44 and how it is applied to the management areas. A complete copy of NR 44 is available on our web site; http://www.legis.state.wi.us/rsb/code/nr/nr044.pdf or by phone request.

The Land Management Classification System

NR44 requires that a system of land management classifications be used in the master plan and on management maps to describe the general management objective for a property or a management area within a property. Each management area is to be assigned a land management classification that most accurately describes the management prescribed for the area, while being consistent with the standards of the classification. Each state property uses only those land management classifications that best fit its character and management objectives. NR 44 includes seven possible Land Management Classifications:

Native Community Management Area
Habitat Management Area
Forest Production Area
Special Management Area
Wild Resources Management Area
Recreation Management Area
Scenic Resources Management Area

Refer to Table 1- Summary of the Land Management Classification System, for a brief description of the general management objectives, possible management activities and the applicable "recreational use setting subclassifications." For a detailed description of these requirements, refer to NR 44.05, "Land Management Classification System."

NR 44 requires that a Type 1, 2, 3 or 4 "recreational use setting subclassification" must be applied in the following land management classifications: Recreation Management Area, Scenic Resources Management Area and Wild Resources Management Area. The recreational use setting subclassification defines the compatible management, uses and appropriate recreational facilities for each of these three Land Management Classifications. (See Table 2- Summary of the Recreational Use Setting Subclassifications.) For a detailed description of these requirements, refer to NR 44.07, "Recreational Use Setting Subclassifications."

It is important to note that the title of a management area does not imply that only management suggested by that title would occur in that management area. For example, a "Forest Production Area" would, in many cases, include management prescriptions for wildlife management, protection of endangered resources, restoration of rare communities, preservation of cultural resources, or preservation of scenic quality, along with the harvesting of forest products. Even though all of these activities may be part of the management prescriptions for the area, it is designated a Forest Production Area because the harvesting of forest products will receive more emphasis than other management activities. In a similar way, a native community management area may include the harvesting of forest products as part of the community management techniques. **This is why it is very important to read the management objectives and management prescriptions for each area in order to accurately understand the proposed management.**

Table 1 - Summary of the Land Management Classification System

	General Management Objectives	Possible Management Activities	Recreational Use Setting
Habitat Management Area	To provide or enhance habitat, whether upland, wetland or aquatic, to support specific species of plants or animals.	Activities may include timber harvesting, herbicide application, mowing, burning, planting, flooding, agricultural cropping, installation of fish habitat devices, road construction and erosion control.	No Recreational Use Setting Subclassification required.
Native Community Management Area	To represent, restore and perpetuate native plant and animal communities, whether upland, wetland or aquatic, and other aspects of native biological diversity.	Activities may include timber harvesting, herbicide application, mowing, burning, planting, road construction and erosion control. Passive management may be employed.	No Recreational Use Setting Subclassification required.
Forest Production Area	To provide sustainable production of timber and other forest products.	Activities may include clearcutting, selection harvesting, thinning and other routine timber stand improvement activities, herbicide application, mowing, burning, planting, road construction and erosion control.	No Recreational Use Setting Subclassification required.
Special Management Area	To provide and maintain areas and facilities for special uses not included under other land management classifications.	Activities may include administrative or service facility areas, cultural resource protection areas, nursery areas, demonstration or research areas.	No Recreational Use Setting Subclassification required.
Recreation Management Area	To provide and maintain land and water areas and facilities for outdoor public recreation or education.	Activities may include timber harvesting, herbicide application, mowing, burning, planting, road construction and erosion control. Passive management may be employed.	Requires designation of a recreational use setting Type 2, 3 or 4. (See Table 2.)
Scenic Resources Management Area	To protect, maintain and enhance for long-term public enjoyment lands or waters having unique aesthetic qualities or outstanding scenic beauty and lands where managing for aesthetics is a primary concern due to significant or special public use of the area.	Activities may include timber harvesting, planting, herbicide application, mowing, burning, flooding, installation of fish habitat improvement devices, road construction and erosion control. Restoration, enhancement and maintenance activities may include cutting trees and shrubs to maintain or create scenic vistas, underplanting or replanting and removal of exotic species. Passive management may be employed.	Requires designation of a recreational use setting Type 2, 3 or 4 . (See Table 2.)
Wild Resources Management Area	To provide and maintain land and water areas where natural ecological processes predominate and evidence of human cultural impact is low; there is little or no visible resource management activity and facility development is limited to primitive recreational uses.	Management activities are limited, but may include techniques for the purpose of protecting or enhancing the outstanding natural or aesthetic values of the area or restoring the wild character of the area or ecosystem, for improving a degraded environment caused by recreational use or past management or development activities, to remove structures, roads or other cultural impacts, or to construct or maintain compatible recreational facilities.	Requires designation of a recreational use setting Type 1, or 2 with limitations. (See Table 2.)

For additional information, please refer to NR 44.07 Recreational use setting subclassifications, available on the WDNR web site; http://www.legis.state.wi.us/rsb/code/nr/nr044.pdf, or by using the BRSF MASTER PLAN LITERATURE ORDER FORM to request the Master Planning Fact Sheet: "NR44 – Master Planning Rules for Department Properties and Land Management Classifications"

Table 2- Summary of Recreational Use Setting Subclassifications

Type 1	**Type 2**	**Type 3**	Type 4
Remote to somewhat remote area Primitive style use		Non-remote area Dispersed use	Social environment Concentrated use
Non-motorized recreation only		Motorized recreational access or use is allowed if it is compatible with other uses and does not damage or degrade the ecological health or quality of resources Areas may be designated for non-motorized or motorized use	Motorized access or use is common
No land management/ development permitted Essentially no recreation facility development Remoteness a very high priority A minimum size requirement	Low to no land management permitted Low to no recreation facility development Remoteness a moderate to high priority No minimum size requirement	Full range of land management permitted Moderate to low recreation facility development Remoteness is not a management priority	Concentrated public use area Fully developed recreation facilities are the norm

For additional information, please refer to NR 44.07, Recreational use setting subclassifications, available on the WDNR web site http://www.legis.state.wi.us/rsb/code/nr/nr044.pdf, or by using the BRSF MASTER PLAN LITERATURE ORDER FORM to request the Master Planning Fact Sheet: "NR44 – Master Planning Rules for Department Properties and Land Management Classifications"

Property-Wide Management Provisions:

The following section describes general practices and polices that would be applied to all lands in the Brule River State Forest that are under state ownership.

Legal Requirements and Agreements

- There are many easements and land use agreements with various public utility companies for facilities such as power lines and gas pipelines. All existing agreements would be honored.
- A minimum-security correction facility is located on the Gordon Unit of the state forest. The Department of Corrections operates this facility on the state forest property through a long-term lease agreement with the DNR. Any expansion or modifications to the terms of the lease agreement would require a Master Plan variance or amendment per NR 44.
- Easements of record and land use agreements exist that provide access across state property to private ownership within the forest boundary. All existing agreements would continue to be honored.
- Management activities on the state forest would take into consideration historical sites and would not knowingly adversely impact any features of historical or cultural importance.
- Management activities on the state forest will follow the procedures outlined in Department Manual Code 1810.1 to assure the preservation of historic resources.
- Archeological reviews are done on all construction sites.
- Use of the property by the military will be restricted to those uses that are compatible with the objectives of the master plan. Military activities are approved by a special use permit and generally include activities such as orienteering training or wilderness camping. Other activities that may occur would be cooperative training or development projects, which further the goals of the property such as trail construction or fish habitat improvement.

Endangered and Threatened Species

- All management actions occurring on the state forest will be done in a manner that does not result in a direct taking of any known endangered or threatened resource.
- One endangered and six threatened species were identified through inventories on the forest. All management prescriptions in this draft management plan have considered the needs of these species and will not result in negative impacts to their habitat.

State Natural Areas

- The Department of Natural Resources manages a variety of property types each with a different legal purpose including state forests, wildlife areas, state parks and state natural areas. State Natural Areas are unique in that they can exist as stand alone properties or be designated within the boundaries of another property type. Two small State Natural Areas currently exist within the BRSF. Following final Department selection of land management classifications for the BRSF preferred alternative in the next stage of planning, opportunities for State Natural Area designations will be considered.

Tribal Consultation

- In consultation with tribal governments, manage the land and other natural resources to provide for the exercise of Chippewa Treaty rights in accordance with applicable law.

Health and Safety

- Within designated use areas such as campgrounds, picnic areas, parking lots, and high use trail systems, identify and remove trees that are deemed as hazards to those using these areas.

Herbicide Use

- The public and tribes will be informed as to the areas where herbicide will be applied, in the BRSF annual meeting and literature. This literature will be provided to a designated Tribal representative and additional information will be provided upon request.

Disabled Accessibility

- All new construction and renovation of facilities would follow guidelines set forth within the Americans with Disabilities Act (ADA), and the recommendations of the "Brule River State Forest- Accessibility Review, Dec. 16, 1999."

Forest Pest Control

- As stated in Wisconsin Statutes 26.30, "It is the public policy of the state to control forest pests on or threatening forests of the state…" This means that all proposed management concepts for the Brule River State Forest must include the ability to implement appropriate forest pest control measures as needed.

Emergency Action Plan

- The property maintains an emergency action plan that describes staff response to natural disasters as they affect public safety and facilities. This plan is reviewed on an annual basis for possible revision. Department responses to natural resource impacts from natural disasters are determined by specific interdisciplinary evaluations following such an event.

Fire Suppression

- As stated in Wisconsin Statutes 26.11, "The Department is vested with power, authority and jurisdiction in all matters relating to the prevention, detection and suppression of forest fires outside the limits of incorporated villages and cities in the state except as provided in sub (2), and to do all things necessary in the exercise of such power, authority and jurisdiction." This means that all proposed management concepts for the Brule River State Forest must include the ability to implement appropriate forest fire suppression measures as needed.

Existing Land / Water Uses and Agreements

- A sea lamprey barrier was constructed in 1986 and is operated on the river's downstream end to prevent adult sea lamprey from swimming upstream, where they would reproduce. This structure will continue to be operated and maintained.

Historic Trails and Trail Easements

- The Tri-County Corridor Recreational Trail connects the City of Superior to the City of Ashland and passes through the forest boundary but is not part of the state forest The state forest does not manage this trail system; therefore the management of this trail is outside the scope of this master plan.
- The historic Portage Trail connected the waterways of the St. Croix and the Brule rivers and has been used for centuries. Maintaining this trail as a feature of the Brule River State Forest would be an element of all management concepts.
- The North Country Trail is administered through the National Park Service and runs from Maine to North Dakota. The state will continue to honor our cooperative agreement with the National Park Service to allow this trail to cross a segment of the state forest.

Municipal Jurisdiction within the State Forest (County and Township roads)

- There are numerous state, county, and town roads within the state forest boundary. These roadways would continue to be managed outside the scope of this master plan for the BRSF. Local road officials would be encouraged to follow Wisconsin's Forestry Best Management Practices for Water Quality (BMPs) while managing municipal roads.

Scenic Resource Management

- Aesthetic management guidelines would be followed as outlined in the DNR "Silviculture and Forest Aesthetics Handbook"- 2431.5.

Watershed Management

- Protect and maintain in-stream conditions that supply all the various habitat needs for the self-sustaining multi-species fishery. The tributaries act as important spawning and nursery areas for the Brule Fishery.
- Manage land resources to control peaks in overland water flow which result in erosion. Research related to this indicates that in a watershed with different aged forest stands and

some open areas, spring snowmelt does not occur all at once. This reduces peaks in overland water flow. In addition, if more than 40% of a watershed is in forests greater than 15 years old the potential for high peak flows is significantly reduced (Verry 1986, WDNR 1995). Management on the BRSF maintains more than 80% of the state land in these older forests.

Water Quality - Best Management Practices

- All management activities within the state forest would follow best management practices (BMPs) for water quality as outlined in "Wisconsin's Forestry's Best Management Practices for Water Quality, A Field Manual for Loggers, Landowners and Land Managers" DNR publication PUB-FR-093-95.

Big Tree Silviculture

- Big tree silviculture as applied on the Brule River State Forest would include management of primarily pine cover types on sites that are capable of growing large diameter trees, as described in Chapter 11 of the "Silviculture and Forest Aesthetics Handbook"- 2431.5. Refer to the glossary for a definition of "big tree silviculture."

Regionwide Natural Resources Management

- The Northwest Sand Barrens Management Group is a group that consists of a broad range of land managers and scientists from local, state and federal governments, as well as university staff that have identified regional management issues within the Bayfield Sand Plain. As a part of this ecological region, the Department will continue to dialogue with this group regarding how the management of the BRSF relates to these regional issues.

Invasive Exotic Species Control

- Removal of Scotch pine, Norway spruce and European larch would occur over time. If ever detected on state lands, invasive exotic plants such as common and glossy buckthorn and purple loosestrife would be controlled. Other invasive exotics, if ever detected, such as spotted knapweed, Eurasian Ruffe, and zebra mussels would be dealt with if appropriate and effective methods are available.

Deer Population Management

- This plan is advisory only to the statutory review processes used every 3-5 years to set population goals. During the last review process the goal was reduced from 20 to 18 deer per square mile of range for the over-winter deer density.
- The Brule River presents a dilemma to deer management. The forest type and the plants of concern are located in areas that naturally concentrate wintering deer. This is compounded by the popularity of feeding deer for recreational viewing. The long linear shape of the forest and its use as a wintering area would require management of deer populations occurring well beyond the state ownership boundaries.
- To effect changes in deer population management goals or feeding practices, concerned citizens, tribal representatives, forest managers and ecologists must be involved with the separate rule making processes that address these specific issues.

Fishing Regulations

- The establishment or modification of fishing regulations occurs in a process separate from the master plan in accordance with NR 20.

Non-Metallic Mining

- Sand or gravel used for property management will come only from existing disturbed areas and will be in areas smaller than one acre.

Funding Constraints

- The ability to implement any master plan element would depend on the budgetary authorization granted to the Department of Natural Resources by the legislature.

Proposed Changes to the Property Boundary

Opportunities for Cooperative Agreements, Purchase of Easements or Land Acquisition

The Department of Natural Resources administers an active land acquisition program for the purpose of protecting water resources, managing forests, providing wildlife and endangered resource habitat and providing outdoor recreational and educational opportunities for all citizens. Acquisition of property within key project boundaries such as the Brule River State Forest (BRSF) provides resource managers with the necessary land base to implement specific Department natural resource and recreation responsibilities. These lands are held in trust for the public to enjoy for fishing, hunting, hiking, sightseeing, bird watching, boating, swimming, outdoor education and numerous other public rights. Today the boundaries of the Brule River State Forest include approximately 50,000 acres, and currently about 41,000 acres are under state ownership.

Properties in the Brule River State Forest Boundary are acquired only under a willing seller / willing buyer agreement, or by donation. Department staff maintains a listing of all private landowners within the project boundaries. Contact is made with these landowners at least once every three years in order to explain the status of the acquisition program in the Forest, and to express an interest in acquiring their properties should they be interested in selling. The Brule River State Forest Acquisition Plan emphasizes priority on acquisition of large tracts of undeveloped lands, parcels with water frontage, environmentally / ecologically sensitive areas and parcels proposed for future recreation sites. This is accomplished by fee purchase, exchange, donation or conservation easements.

In addition, there are several areas along the lower river and the upper lakes and springs with significant private ownership within the current forest boundary. The Department policy is to purchase land from willing sellers within the established project boundaries. The availability of land acquisition funds and the willingness of landowners to sell determine how much land is purchased any given year. In the case of the Brule River State Forest, one of the DNR's older properties, the Department has been acquiring land for almost 90 years, and this is likely to continue for many more years.

There are some areas within the Forest that the Department does not pursue acquisition, such as, within the Town of Brule and in areas controlled by associations of property owners. Many upper river residents have signed an agreement with The Nature Conservancy, which involves some controls concerning the use and development of the properties. Also, certain circumstances may exist that may render a property undesirable such as an abandoned dumpsite which may present a liability for hazardous materials. **Properties that have expensive improvements that are not easily moved or salvaged are generally not pursued. The Department's interest is in undeveloped or underdeveloped land. Natural Resources Board policy currently discourages purchase of any property where the value of its improvements exceed 35 percent of the value of the real estate.** Acquisitions are subject to the approval of the Natural Resources Board and the Governor. If either of them reject the option, the Department cannot acquire the property.

Taxpayers and local governmental officials sometimes oppose public land acquisition because the lands are removed from the tax rolls. Although this is true, the Department makes payments in lieu of taxes to offset tax losses. Presently, the state makes a payment in lieu of taxes to each taxation district in an amount equivalent to the property taxes. Under the payments in lieu of taxes programs, it is clear that **acquisition of land for the state does not increase local taxes.**

For more information on this subject, refer to the BRSF Master Plan – Land Acquisition Program Fact Sheet.

It is important to note that the Department will continue to pursue cooperative management of land with private landowners within the Brule River State Forest project boundary. The opportunity for the DNR to cooperate with other landowners in the management of adjacent lands is also extremely important to the future health of ecological systems within the forest. The Bois Brule watershed consists of an approximately 195 square mile area that extends well beyond the boundary of the Brule River State Forest. The Bois Brule River system was included in NR 102.10(1)(d) as a "system" under Class I trout streams. Thus the entire river and all of its tributaries, and their tributaries are considered "outstanding resource waters." Thus, land use decisions by jurisdictional governing bodies or agencies, concerning areas outside of the state forest boundary, deserve careful consideration in regard to any potential impact on the water quality of the Bois Brule River system.

Implementation of the master plan would include on-going communication with the municipalities, county governments, county foresters, land trust organizations, industrial forest owners and private property owners, paying particular attention to the protection of the water quality within the watershed. DNR staff would work to encourage stewardship of the lands particularly in the Bois Brule watershed and the identified subwatersheds, which drain into the Brule River.

Current Project Boundary

The current project boundary includes an approximate total target acreage to 50,000 acres. Of this total acreage, approximately 41,000 acres are in state ownership and 9,000 acres are in private ownership.

Proposed Expansion of the Current Boundary

This master plan proposes to expand the current boundary at the northern, western and southern edges of the property. These areas are proposed to be included in the state forest boundary because they impact on and make significant contributions to regional open space, link regional biological corridors, have important ecological restoration potential, help protect the watershed and lakeshore, and provide recreational opportunities. The area included in the proposed northern boundary expansion is approximately 17,000 acres. The area included in the proposed western boundary expansion is approximately 1,000 acres. The area included in the proposed southern boundary expansion is approximately 26,000 acres. Together, these areas add approximately 44,000 acres. If approved, this would increase the project boundary from 50,000 to about 94,000 acres. These lands are important to further the landscape level management proposed in this plan.

Northern Boundary Expansion Area

The limit of the northern boundary expansion begins at the current west end of state ownership along Lake Superior, extends west one mile and heads straight south to Highway 13. From there it would run east to the county line and return north to Lake Superior (see Map 2). If acquired, this would add approximately 15,000 acres to the state forest. About 40% of the parcels in this area that are not currently owned by the state of Wisconsin are undeveloped industrial forestlands and much of that land is contiguous to the existing state forest.

This ownership would be an important addition the Brule River State Forest for the following reasons:

- It would allow a more functional "landscape scale" restoration of a "clay plain boreal forest," a rare ecological community in Wisconsin.
- It provides the potential to preserve a wild and remote recreational setting along Lake Superior, to protect the land from development, and to protect additional watersheds that flow into Lake Superior.
- It provides the potential for a large-scale demonstration of silvicultural practices for boreal forest management.

If acquired, the area north of a line extending east and west of the Lamprey Barrier would be managed similar to the Lake Superior Clay Plain Native Community Management Area. The area south of this line and north of Highway 13 would be managed similar to the Highway 13 Management Area. (See Map 2.)

Western Boundary Expansion

The western boundary expansion area consists of approximately 1,000 acres of land located along the current western boundary near Nebagamon Creek (see Map 2). Approximately 120 acres of this area is in two blocks of undeveloped industrial forest ownership and the balance is in private ownership. This area includes the confluence of Blueberry and Nebagamon Creek and the portion of Nebagamon Creek downstream that flows into the Bois Brule River.

This area is important to include in the BRSF boundary because it would connect two blocks of Douglas County Forest located adjacent to the current western boundary. Eventual acquisition of this area from willing sellers would create a block of public forest, which would allow for the cooperative management of the majority of the Blueberry Creek watershed. It would provide long-term protection for this portion of the watershed and tributary to the Bois Brule River and for the quality and quantity of waters reaching the Brule.

If acquired, this area would be managed as a Native Community Management Area with the primary objective of preserving and protecting the water quality, fishery, and native communities.

Southern Boundary Expansion

The southern boundary expansion area is approximately 25,000 acres in size. The limit of the southern boundary expansion area begins at the St. Croix Picnic area and heads south to county Highway A. It then follows the highway east to the county line and then runs north to the current property boundary. Approximately 95% of this area is in large blocks of undeveloped industrial forest ownership.

Young red pine plantations dominate the proposed southern boundary expansion area. Several small undeveloped lakes are also located within this area. Many miles of rustic town roads and various logging trails cross this area.

This ownership is an important addition the Brule River State Forest for the following reasons:
- It would allow a "landscape scale" restoration of the globally rare pine barrens ecosystem and would permit more extensive use of controlled burning through use of permanent firebreaks.
- It would help secure populations of grassland/barrens wildlife in the region, including sharptail grouse.
- It would provide important open-space and recreational links to other public lands in the region including the potential for new trails and campgrounds.

- It would provide long-term protection for approximately 20 small lakes from 5 to 40 acres in a more wild and remote setting than found in the rest of the forest.
- It would provide long-term protection of watershed and a major recharge area for the artesian springs that create the unique cold water fishery of the Bois Brule River.

If acquired, this area would be managed as indicated for Area 17- Pine Barrens- Native Community Management.

Land Management Areas

Please refer to the Land Management Area (Map 2) for the location of the 21 management areas described in the following text. Land Management Areas within the Brule River State Forest have been divided into blocks with similar ecological potential and management goals. The basis for their ecological characteristics comes from their respective ecological landscapes, (see Map 1) which are based on the National Hierarchical Framework of Ecological Units. Each area is considered as a component in the overall management of the property.

Each land management area has been assigned a Land Management Classification and includes a brief description of the area, the short-term and long-term management objectives, management prescriptions and a description of the recreation management in that area. The Land Management Classifications of Scenic Resource Management Area and Recreation Resource Management Area have also been assigned a "recreational use setting subclassification."

As mentioned in the introduction, several management areas include more than one management option. This reflects the areas and management actions that are the focus of remaining public debate. The description of the options is followed by a comparison and evaluation of the options. The comparison and evaluation is not intended to serve as an Environmental Impact Statement (EIS). It is provided for the information of the reader in order to facilitate a focused and productive discussion of these issues. A full EIS document will be prepared as part of the Draft Master Plan.

MAP 1
8 ½” x 11”
“Ecological Landscapes”

Map 2
COLOR 11” x 17”

“Land Management Classification Areas”

Map 3
COLOR 8 1/2” x 11”

“Brule River State Forest Recreation”

Lake Superior Clay Plain – Ecological Landscape

Subsection 212Ja (National Hierarchical Framework of Ecological Units)

An opportunity exists to restore boreal forests on the clay plain of the property. The boreal community was always of limited extent but is now rare within Wisconsin, although this community exists broadly in other parts of the continent. The conifer dominated forests along the Brule River support significant concentrations of boreal birds, many on the southern edge of their range. The size and shape of the property and dominant land uses in the surrounding landscape may limit some large-scale conservation opportunities.

The natural history of this landscape indicates that a lake modified glacial topography of clay till occurs primarily north of County Highway FF. This area formerly supported a Wisconsin variation of a boreal forest. In the mid-1800s a conifer-dominated forest occurred on the clay plain. Large white pine towered above a secondary canopy of white spruce and white birch. Balsam fir, aspen, upland white cedar and tamarack were common associates.

Today the clay plain forest is dominated by relatively young aspen stands. White spruce and balsam fir occur as an understory in some areas. Mature white spruce and balsam fir occur in several of the ravines on the lower Brule River and its tributaries. The three dominant pre-settlement trees, white pine, white spruce, and white birch, are largely absent from the current clay plain forest.

Area 1- Lake Superior Clay Plain- Native Community Management Area- Options

This management area, including both private and state owned lands within the current project boundary, is approximately 5,000 acres in size. It occurs within the larger Lake Superior Clay Plain ecological landscape. This management area includes all of the state forest north of a line extending east and west from Riverview Drive / McNeil's Road. This is approximately the same area identified in the "Biotic Inventory of the Brule River State Forest" (Epstein et al. 1999) as the Lower Brule Boreal Forest & Lake Superior Shoreline Macrosite. Refer to this document for a more detailed description of the management area.

An additional 11,000 acres, approximately, would be added if the lands identified in the proposed northern boundary expansion were to be included.

Currently, the forest in this area is dominated by aspen. Scattered individual white spruce and white pine exist through this area but regeneration of these species is generally lacking. Near Lake Superior, white birch becomes a more common component of the forest. Analysis of historic records shows a high importance of white spruce, white pine, and white birch, the "three whites," in the original forest cover along with common associates including white cedar, red maple, balsam fir, aspen, upland white cedar and upland tamarack. (Mossman et al. 1997, Bartelt et al. 1999, Eckstein et al. 2001).

This portion of the Brule River State Forest was identified as one of only a few public lands in the Lake Superior Clay Plain that provides an opportunity for restoration of boreal forest (Bartelt et al. 1999).

Many of these areas were severely disturbed through unregulated logging around the turn of the last century, followed by massive wildfires, and attempts at farming. In some areas early management efforts focused on replanting and restoring the forest for water resource protection and other forest benefits. In other areas aspen simply seeded into fallow fields. After 50 plus years of management the forest was developed enough that harvesting forest products and producing optimum game habitat became management opportunities. Since the mid-1980s, the Brule River State Forest has been managed with emphasis on integrated ecosystem management.

This area also includes the steep, red clay slopes bordering the Bois Brule and its tributaries, which contain remnant stands of older boreal forest. At the mouth of the Bois Brule River there is a small lagoon and emergent marsh complex, described in the "Biotic Inventory" as the "Brule River Marsh and Lagoon." Extensive stretches of undeveloped Lake Superior shoreline are found to the east and west of the mouth of the river. Much of this is unvegetated sand beach. The present upland vegetation behind the beach and above the low clay bluffs generally consists of open stands of trembling aspen, with a dense shrub layer of speckled alder.

The existing recreational facilities at the mouth of the Brule River are included in the Bois Brule River – Recreation Management Area (Area 7). They include a small boat landing with an adjacent picnic area, a parking area for approximately 30 cars, pit toilets, informational facilities, and a well with a handpump. Recreational facilities in the Lake Superior Clay Plain- Native Community Management Area include several fisherman parking areas and foot trails leading to the river.

Area 1 Management Objectives:

The long-term management objectives are as follows:

Restore the forested portions of this area to contain a dominance of species such as white spruce, white pine, and white birch, along with common associates including white cedar, balsam fir, aspen, and upland tamarack. Maintain a closed canopy forest with stands well represented by large and relatively older trees (older than their traditional rotation age). This desired community would have much of the structural diversity typical of natural old growth forests, including dead trees, snags, tip-up mounds and a substantial amount of coarse woody debris. This structure would benefit wildlife such as woodpeckers, cavity nesters, small mammals, amphibians and their predators such as fisher and bobcat. The understory would be characterized by a dense understory growth of alder, beaked hazel and mountain maple. Preserve the approximately 35 acre "Brule River Marsh and Lagoon" complex in its current native condition. Protect the water quality within the watershed. Continue to provide the unique hunting opportunities offered by the Brule River State Forest. Preserve and enhance the natural aesthetic quality, particularly in areas seen from the Brule River, its tributaries, lagoons, the Lake Superior shoreline and designated public use areas.

The short-term objectives are to begin the process of restoring "boreal forest" by maintaining the existing areas of older closed canopy forest located along the river's side slopes and along the Lake Superior shore. Allow natural succession, or apply active management, to shift the dominant tree cover in the upland terrace areas from aspen to older white spruce, white pine, and white birch (the "three whites").

The restoration of the historic boreal forest community would be an extremely slow process (>100 years) with no guarantee of success (Eckstein et al. 2001). This ecosystem has been substantially altered since European settlement in this region. First the timber was cut off of the landscape. This was followed by attempts at agriculture that included fires to clear the land. These fires burned the duff layer of the soil, greatly modifying the soil characteristics. Many of the historically occurring seed sources are no longer present in the area. Restoration efforts would be further challenged by the clay soil in the area, which is often either too wet or too dry for successful seeding or planting of trees.

Option 1A – Preferred

Option 1A proposes to accomplish the objective of restoring boreal forest through an adaptive combination of active and passive forest management techniques.

The "Community Restoration and Old Growth Assessment" recognizes the challenge of restoration in this community type and recommends a varied and adaptive management approach (Eckstein 2001). To maximize the chances of success, the restoration plan would need to be adaptive to things that work and would need to experiment with alternative methods.

Methods used to accomplish the boreal forest restoration would vary by site. Some areas receive intensive management, while other areas would receive little or no management. The methods used must be flexible and responsive to successes and failures. Community restoration practices would first be attempted on a small scale to see what would be successful. In some areas it is proposed to allow natural processes to occur by allowing succession to proceed. In many areas the historic, pre-european settlement species are limited, and it would take decades or centuries before they are abundant on a landscape scale.

Under Option 1A, passive (hands-off) management would be applied to a "core area" of forest located along the Lake Superior shoreline, on the low terraces and clay slopes along the Bois Brule River and its tributaries. This "core area" would also include portions of the upland adjacent to these areas that are currently dominated by aspen and other early successional species. The Lake Superior shoreline, and any low terrace and slope areas would be passively managed as an old-growth native boreal forest community. The portions of the upland adjacent to these areas would be used as "control" study areas. Stands currently dominated by aspen and other early successional species would be allowed to naturally transition to later successional species. The resulting community that develops is unknown but, based on current regeneration, is likely to be dominated by balsam fir with limited areas of white pine, white spruce, aspen and white birch. It is unlikely that white cedar would naturally regenerate, even though it is one of the typical associates of this community.

Similar upland terrace, aspen dominated stands located nearer to the southern limit of the area would be actively managed using a variety of silvicultural techniques aimed at restoring a boreal forest community. Management actions would attempt to mimic natural processes favoring the desired tree species and encourage a more rapid progression through the successional process. Techniques would include the harvesting of overstory aspen and the replication of natural disturbance patterns by performing small irregularly shaped clear cuts, prescribed burns or herbicide applications followed by planting or site preparation and seeding.

Once white spruce, white pine and white birch have become common on the landscape restoration efforts would turn to re-establishment of other biota associated with the boreal forest community. Snag trees and woody debris would be left to benefit wildlife such as woodpeckers, cavity nesters, small mammals, amphibians and their predators such as fisher and bobcat.

Option 1A- Management Prescriptions:
As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short term objectives identified above:

"Passive Management Core Area":

- Perform no forest management in the "core area", except as necessary to maintain public safety and control invasive exotic species.

"Adaptive Management Perimeter Area":

- Identify uplands dominated by aspen, grass or brush at the southern perimeter of the "core area" in order to apply and evaluate various management practices in an effort to achieve the short and long-term objectives. Techniques used in different areas would include:

  - harvesting timber to remove overstory aspen or other hardwood species in order to facilitate conifer planting and to increase the conifer component by allowing in more sunlight to existing conifers.

  -monitoring deer browse impacts and make recommendations on deer herd harvest levels.

  -replicating the natural disturbance process of blowdowns by clearcutting timber in small (2 to 10 acre) irregular areas, if possible, in range of a seed source. These harvests would be designed to promote regeneration of white spruce, white pine and white birch, which require partial sunlight. Direct seeding or planting would occur if natural regeneration fails.

  -planting various sizes of white spruce, white birch, white cedar and white pine in a naturalistic pattern, in some of the disturbance areas described above or in natural openings. Some areas may employ techniques to minimize deer browse impacts.

- To the maximum reasonable extent, limit logging operations to periods when the soil is dry or frozen.
- Reduce peak stormwater flows to the Brule River by plugging old drainage ditches to re-establish sheet flow of water across the landscape.

Option 1A- Recreation Management:
- Maintain the current size and number of parking lots.
- Close all new forest management roads to motor vehicle traffic following any management activities. These roads would be open to hunters and other non-motorized recreators for walking only.
- Establish a new "hunter walking trail" within this area.

Option 1A- Cultural Resources:
- Preserve and protect the historic Clevedon settlement grave sites site in this management area.

Option 1B

Option 1B proposes to test if the management objectives can be achieved through passive management and some planting. It proposes the same management prescriptions as Option 1A, except in the area of timber harvesting. Under Option 1B, no forest management would be performed in the Lake Superior Clay Plain Management Area, except for some planting and seeding.

Option 1B- Management Prescriptions:
- Plant seedlings by hand of the desired boreal species (white pine, white spruce, and white cedar) in a naturalistic pattern in natural openings or under the existing canopy.
- Allow existing older stands of red pine and white pine to develop "old growth" characteristics.
- Do not harvest timber except to remove hazard trees in or adjacent to designated recreation facilities, control fires or as required to control forest pests.

Option 1B- Recreation Management:
The Recreation management for Option 1B would be the same as indicated for Option 1A.

Option 1B- Cultural Resources:
The cultural resource management for Option 1B would be the same as indicated for Option 1A.

Comparison and Evaluation of Management Options 1A and 1B:
Option 1A's adaptive use of both active and passive management practices represents the best known options to provide the highest likelihood of success in establishing a boreal forest community. Option 1A would result in a visible change in the forest's composition in several decades. Harvesting of the aspen overstory would allow more effective site preparation and successful planting of boreal conifers while providing a supply of forest products. The clearcutting of small forest openings would mimic natural disturbance patterns and provide the opportunity for natural seeding of white pine. This natural reseeding of white pine has been successfully demonstrated in existing wildlife openings

located near a seed tree. These methods intentionally disturb the soil and impact the understory vegetation to increase the survival of seedling trees. These methods will maintain the desired white birch component. The passively managed "core area" would remain undisturbed by timber harvesting, site preparation or planting and serve as a benchmark to evaluate various management techniques. By evaluating the relative results, the more successful techniques could then be applied on a larger scale within the management area.

Option 1A would require more staff time for the administration of timber sales. Some revenues would be generated from those sales. Under Option 1A soil compaction and erosion would be mitigated using "Best Management Practices" and performing harvesting on frozen soil or under very dry conditions. Timber harvest and restoration actions would impact the aesthetics of some interior forest areas but aesthetic management would continue along roads and waterways.

Option 1B's proposed use of passive management methods would take a longer period of time to re-establish a higher component of white pine and white spruce necessary to reach the desired boreal forest composition. Planting of seedlings in the understory without ground disturbance reduces survival because of competition and limited sunlight. Balsam fir will likely become more dominant in the overstory with this passive management. Without significant natural disturbance events, white birch will decline significantly in this option. Overall, this option would take hundreds of years to demonstrate a significant change in the forest composition.

Under Option 1B, old aspen would be vulnerable to damage from windstorms. Without salvage operations to remove the naturally fallen trees, fire danger would increase due to the additional fuel build-up.

Option 1B would result in less human disturbance to the ecological communities because of limited management actions. The accumulation of naturally fallen trees and branches would provide ecologically beneficial structure for wildlife, insects, fungi and microorganisms. This method would leave more woody debris on the forest floor, which would slow stormwater runoff.

Certain elements of both Options 1A and 1B, such as tree planting, would be expensive to implement and would require significant staff and/or volunteer time. The restoration of a complete "clay plain boreal forest" community as a long-term objective would be expensive, time intensive and the ultimate success uncertain, due to the substantial changes in site conditions since European settlement. Success in restoring the boreal forest community is uncertain and the use of a varied and adaptive management approach, as proposed under Option 1A, represent the best chance for successful restoration while providing a variety of other benefits. For these reasons, Option 1A is indicated as the "preferred" option.

Area 2- Lamprey Barrier- Special Management Area

The Lamprey Barrier Special Management Area includes the structure itself, the access road and the area of the river surrounding the structure. The approximate size of this area is 10 acres. The Lamprey Barrier Special Management Area is located on the Brule River at the southern boundary of the larger Lake Superior Clay Plain- Native Community Management

Area. This is a concrete and steel structure that was constructed in 1986 to prevent adult sea lamprey, a non-native exotic species, from swimming upstream, where they would reproduce and significantly degrade the fishery.

Area 2- Management Objectives:
The short-term and long-term management objective for the Lamprey Barrier is to maintain this site to control the invasive exotic sea lamprey and to facilitate future study of the fishery.

Area 2- Management Prescriptions:
As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short-term objectives identified above:

- Maintain the structure and access road to allow its continued use and up-grading as necessary.
- Discourage access to this site for non-scientific purposes.
- The portion of the forest visible from the Brule River, its tributaries, lakes, and designated public use areas would have no active management (timber harvest/ground disturbance). Periodic disturbances such as windstorms or high water conditions would create disturbances, which would regenerate this forest type. Timber salvage operations would not happen within site of the river. The only cutting that would occur along the river would be done to provide a safe experience to users of the forest and river. This cutting would generally not remove the timber products from the areas.

Area 3- Highway 13 Management Area- Options

This area is located within the larger Lake Superior Clay Plain ecological landscape. This area, including both private and state owned lands within the current forest boundary, is approximately 6,800 acres in size. It includes the area in the present state forest north of County Trunk "FF" and a line extending east and west from Riverview Drive / McNeil's Road. A mixture of forest and open grassland is typical of this area. Currently, the forest area is dominated by aspen. Scattered individual white spruce and white pine exist through this area but regeneration of these species is generally lacking. This younger forest provides high quality habitat for songbirds and game species such as grouse but is common on other land ownerships in the region (Watkins et al. 2001). This area contains the majority of previously developed wetlands and contains a state waterfowl refuge along Clevedon Rd.

An additional 6,000 acres, approximately, would be added if the lands identified in the proposed northern boundary expansion were acquired.

This area is part of the historic clay plain boreal forest (Eckstein et al. 2001). This historic boreal landscape contained areas of younger aspen/birch forest but in a much lower percentage than currently exists here. The managed wetlands also offer waterfowl hunting and wetland wildlife habitat benefits. Recreational data indicate that while similar game habitat is found elsewhere in the region, the BRSF attracts hunters seeking the unique setting it provides (Watkins et al. 2001). The grasslands currently maintained in this area

were not a part of the historic condition but offer some unique opportunities to manage for rare grassland birds (Sample and Mossman 1997, Bartelt et al. 1999, Epstein et al. 1999, Eckstein et al. 2001). Other than the grasslands no specific management needs for rare or uncommon species were noted in this area by the "Biotic Inventory of the Brule River State Forest" (Epstein et al. 1999).

Input received on the Alternative Concepts was mixed regarding the amount of aspen and grassland that should be maintained within the clay plain. Some comments favored managing the entire landscape toward conifers and minimizing early successional habitats, while others noted the biological and recreational benefits of the early successional habitats. Therefore two options are presented here to generate additional public discussion.

Option 3A – Habitat Management Area

Option 3A- Management Objectives:

The short and long-term management objectives of Option A are as follows:
Maintain the existing community types of aspen dominated upland forest, open grassland brush lands and man-made wetlands, but increase the diversity in terms of species and age classes to gradually increase in the percentage of conifers toward a boreal forest composition. Maintain and enhance wildlife habitat for songbirds, wetland wildlife, waterfowl and other wildlife game species such as grouse. Protect the water quality within the watershed. Continue to provide the unique hunting opportunities offered by the Brule River State Forest. Preserve and enhance the natural aesthetic quality, particularly in areas seen from the Brule River.

Option 3A- Management Prescriptions:

As appropriate for the specific site, existing ecological communities, wildlife species and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short-term objectives identified above.

- Maintain grasslands by periodic mowing or prescribed burns.
- Maintain existing brush lands through chemical or mechanical management.
- Enhance wetlands by plugging surface drainage ditches, construction of low-head dikes, etc. for a wide variety of wildlife shore birds such as sora rails, american bitterns, spotted sandpipers, pied-billed grebes; song birds such as sedge wrens, yellow-headed black birds, belted kongfisher, eastern koingbird; and waterfowl such as mallards, bluewing teal, hooded merganser, and canada geese.
- Perform no timber harvests on the slopes or in the stream corridors, except as necessary to maintain public safety and control invasive exotic species. Retain large woody debris to minimize erosion, reduce rate of run-off, and increase habitat quality for both fish and wildlife.
- Maintain aspen on the flatter upland through small (generally less than 10 acres in size) irregularly shaped patch clearcuts. Snag and den trees would remain to provide for cavity nesting birds and animals. Individual trees or patches of trees would be left to increase within stand tree diversity without compromising the aspen forest type. Tree species that would be encouraged to create this diversity would be bur oak, black ash, white spruce, white pine, white birch, and balsam fir. Where a natural seed source no longer exists, trees or shrubs may be planted to provide future seed sources.

- Encourage conifers near and along sloped drainages through selective removal of hardwoods (including aspen), seeding, planting, or allowing natural succession.
- In some areas allow woody debris to remain to benefit wildlife, including wood frogs, toads, blue-spotted salamanders, mice, chipmunks, etc.
- Harvest timber during periods when soil is either frozen or dry.
- Maintain open grasslands through a combination of mowing, burning, and consider replanting (disking and plowing) on occasional basis.
- Smaller scattered forest openings would continue to be maintained through mowing, hand cutting, or herbicide.
- Surface drainage ditches would be blocked to restore diffuse surface drainage patterns.
- Larger wetlands would be restored, enhanced, or created to foster sedge meadows, shallow marshes, and open marsh wetland habitats.
- Consider using herbicide to control exotic plants or to create the desired vegetative composition when other natural or mechanical methods are not effective.
- The portion of the forest visible from the Brule River would have no active management (timber harvest/ground disturbance). Timber salvage operations would not happen within site of the river. The only cutting that would occur along the river would be done to provide a safe experience to users of the forest and river. This cutting would generally not remove the timber products from the areas.

Option 3A- Recreation Management:

- Due to the heavy clay soils in this area, the primitive roads within this area would be closed to motorized use except to facilitate resource management activities. Primitive roads in this management area may be mowed to provide hunting opportunities.
- Develop an interpretive wayside display to explain the importance of this habitat in the scope of the Brule River State Forest.

Option 3B – Native Community Management Area

Option 3B- Management Objectives:

The management objectives for Option 3B would be the same as those stated for Area 1-Lake Superior Clay Plain- Native Community Management Area- Option 1A. This option proposes to restore a boreal forest of higher conifer component through a combination of active and passive methods.

Option 3B- Management Prescriptions:

The management prescriptions for Option 3B would be the same as those stated for Area 1-Lake Superior Clay Plain- Native Community Management Area- Option 1A.

Option 3B- Recreational Management:

Recreational Management for Option B would be the same as indicated under Option A.

Comparison and Evaluation of Management Options 3A and 3B:

Under Management Option 3A, the flat, upland forest areas would remain in early successional, aspen dominated cover. This type of forest cover is typical of natural conditions following a windstorm, insect outbreak, or wildfire that historically occurred in a smaller percent of the area throughout this land-type.

Nearing the tops of the slopes along the steams there would be a gradual increase in the percentage of conifers. Older conifers would dominate the cover on the slopes near and along the streams.

The existing grassland, brush land and wetlands would be maintained. Option 3A would continue to provide habitat for the unique combination of hunting and other recreational opportunities provided by the Brule River State Forest (Watkins et al. 2001).

The grasslands and brush lands would provide habitat for a variety of game and non-game wildlife species, as well as grassland birds such as upland sandpiper and sharp tailed grouse (Epstein et al. 1999). Some of the other benefactors would include songbirds such as eastern meadowlarks, clay colored sparrows, and bobolink. The grasslands would also provide summer habitat for leopard frogs, nesting habitat for waterfowl, grazing and fawning areas for deer, and year-round habitat for sharp-tailed grouse. Other wildlife species benefited would be a variety of declining songbird species such as golden-winged warblers and several game species. Ruffed grouse, woodcock, deer, and bear habitat would be optimized.

Option 3A proposes to create additional wetland habitats in ranging from ash swamps and sedge meadows to shallow and open water marshes. These larger wetland areas would provide a variety of open wetland types that would benefit not only the traditional waterfowl species (ducks and geese) but also species such as sedge wrens, sandpipers, snipe, rails, herons, and bitterns. Additional benefits from wetlands would be to restore sheet flow and provide storm water storage to reduce rate and volume of major snowmelt and rain events.

Option 3A would produce regular changes to the vegetation through timber harvest, mowing, burning etc. These activities would have impacts on the aesthetic qualities of the area. Some of these activities would require staff time to conduct, while others such as timber harvest or haying are conducted by contractors. Generation of these forest products and hay generates revenue for the state and provides a product to the local community. Option 3A provides benefits that are not being produced in other parts of the state forest and important natural resources would be lost on the forest if option 3B were selected.

Under Management Option 3B, forest cover would be managed to change it from an aspen dominated cover to a conifer dominated "boreal forest" community. Existing wetlands would be maintained but their value to some wildlife would decrease without the associated grasslands. Grasslands would be adaptively managed to restore them to a "boreal forest" community. This option would decrease the amount of grassland and brush land habitat for the species indicated above, but would increase the habitat for wildlife normally associated with boreal forest communities. Maintaining the grassland and brushland areas for wildlife habitat would require on-going periodic mowing or burning operations, which are labor intensive.

Option 3B would allow these grassland and brushland areas to transition to a vegetative cover that would naturally occur on this ecological unit. As described for the Lake Superior Clay Plain- Native Community Management Area- Option 1A, accomplishing the objective of restoring the existing grassland, and brush land areas to restore boreal forest would require an adaptive approach. This adaptive approach would apply the lessons learned from

the various restoration techniques used and evaluated in the management of the Lake Superior Clay Plain- Native Community Management Area. These more successful techniques would facilitate the transition to boreal forest by attempting to establish the desired boreal tree species. Within several decades a decrease in the aspen, grass and brush cover would be associated with an increase in the conifer cover.

The active management actions in option 3B would create regular changes to the vegetation thus impacting the aesthetics of the area. Both short term (timber harvest, planting site preparation) as well as long-term (change from open grass/brush to trees) changes would be observed. This option would continue to generate forest products but hay production would be eliminated.

Both options present different benefits to the wildlife, natural communities and human users of the BRSF. At this time the department has not selected a preferred option for managing this track. These 2 options are being presented in order to generate additional public input on the future management of this area.

Area 4- Sugar Camp Hill / Lenroot Ledges - Native Community Management Area

This management area occurs within the larger Lake Superior Clay Plain ecological landscape. This area, including both private and state owned lands within the current project boundary, is approximately 1,700 acres in size. It is located on the west side of the forest in the area known as the "Copper Range." This area includes the following sites identified in the "Biotic Inventory" (Epstein, et al 1999): CCC Miller Boreal Forest and Pines, Sugar Camp Hill, and Lenroot Ledges. As suggested in the "Biotic Inventory", these sites have been combined into a single management area, thereby increasing their combined conservation value and reducing forest fragmentation. This is the core area of the largest block of closed canopy, northern hardwood forest that currently exists on the Brule River State Forest. The forest cover within this area contains a mixture of northern red oak, basswood, sugar maple, ash, balsam fir, aspen, and white birch. Reproduction of shade tolerant species like sugar maple and basswood is good under this closed canopy while reproduction of red oak or white birch will depend on some future disturbance. Closer to the river, white pine and white spruce become more common. This area contains the richest soils found on the BRSF.

Scientific assessments noted the potential to support a northern hardwood forest on Sugar Camp Hill and boreal forest on Lenroot Ledges. However, the "Community Restoration and Old Growth Assessment" (Eckstein et al. 2001) rated the restoration /old growth opportunity for the northern hardwood community as low. The "Regional Ecology Assessment" (Bartelt et al. 1999) noted that other public lands in the region have greater opportunity to support the northern hardwood community type.

WDNR experts discussed the varied findings of the Assessments and determined that, while the opportunity to restore an "old growth" northern hardwood community was considered a relatively low priority in the regional context, it was agreed that it is an important community in the context of the BRSF's landscape management. It is important because it

provides the largest block of closed canopy forest, thereby, reducing forest fragmentation and increasing the conservation value. It also provides wildlife habitat, stand diversity and serves as a buffer for rare species and a wildlife corridor (Epstein, et al 1999).

Land ownership in this area is a mixture of public and private. This area contains several sites of historical value. The Old Bayfield Road hiking trail follows an old travel route that connected the towns of Superior and Bayfield and was traveled by foot and later by horse and wagon. Copper mines were active on Sugar Camp Hill in the 1870s and one old mineshaft can be viewed from the hiking trail.

A designated snowmobile and winter ATV trail crosses through this area. It connects with the Tri-County Corridor on the south end, continues northward from Miller Road, turns east and crosses the river near the Copper Range Campground, continues east and connects with a Bayfield County snowmobile trail.

Area 4- Management Objectives:
The long-term management objective for the entire area is to develop a primarily closed canopy, managed old-growth, native mixed species forest. In the Sugar Camp Hill area the objective is to maintain the well developed canopy with a full mix of northern hardwood species. In the Lenroot Ledges area, the objective would be to maintain a conifer dominated forest realizing that much of this area is in private ownership and out of state control. In the remainder of Area 4 the objective would be to develop northern hardwood forest with areas dominated by conifers The vegetation would be characterized by a large block of northern hardwood forest containing a mixture of northern red oak, basswood, sugar maple, ash, balsam fir, aspen, and white birch. Closer to the river, white pine and white spruce become more common. These stands would be represented by large and relatively old trees (older than their traditional rotation age). This community would have much of the structural diversity of typical natural old growth forests, including dead trees, snags, tip-up mounds and a substantial amount of coarse woody debris. The natural aesthetic quality would be preserved and enhanced, particularly in areas seen from the Brule River, its tributaries, lakes, and designated public use areas.

The short-term objective is to maintain the existing closed canopy northern hardwood forest. Begin by first focusing on the tree cover of the area. Manage for large diameter, native tree species and other old-growth characteristics. Gradually restore the dominant forest covertype tree species described above.

Area 4- Management Prescriptions:
As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short term objectives identified above:

- Continue to practice Big Tree Silviculture, which extends the rotation ages for long lived tree species to establish larger trees, and other old growth characteristics.
- Manage this area with small-scale actions. Limited management would occur in the Sugar Camp Hill area to maintain a component of oak. This would include small (2-5 acres) clear cuts to regenerate this species. These small cut areas would be done in conjunction with a good acorn crop year to facilitate regeneration of the oak. This

would be done on a maximum of 50 acres, spread out over a 15 year time period, on the Sugar Camp Hill site (550 acres).

- Limited forest management within these connecting areas to promote the establishment of a higher percentage of conifer cover. This may include thinning stands of young hardwoods to provide light conditions favoring the establishment of conifers. This may be done in conjunction with planting or seeding to promote the conifer cover type.
- Monitor for deer over-browsing and make recommendations on herd reductions if necessary.
- Perform similar management across the river at the Promontory site to create a larger block and provide maximum ecological benefits.
- The Lenroot Ledges area is mostly private land, but contains a good example of what a "clay plain boreal forest" could look like and how it could be used as a template for other restoration efforts.
- The portion of the forest visible from the Brule River, its tributaries, and designated public use areas would have no active management (timber harvest/ground disturbance). Timber salvage operations would not happen within sight of the river. The only cutting that would occur along the river would be done to provide a safe experience to users of the forest and river. This cutting would generally not remove the timber products from the areas.

Area 4- Recreation Management:

- Manage the historic Old Bayfield Road Hiking Trail found on Sugar Camp Hill as a moderately developed trail, except that no significant grading would be done to provide access for people with disabilities. Maintain the parking lot at the trailhead at its current capacity of approximately 6-8 cars. Construct a small accessible unisex pit toilet. These management decisions are designed to accommodate visitors while maintaining the rustic character of the property, two goals identified in the Recreational Supply and Demand Assessment and the Property Vision and Goals. (Watkins et al, 2001)
- Close the primitive roads within this area to motorized use except to facilitate resource management activities. These roads would be open to hunters and other non-motorized recreators for walking only and may be periodically mowed.
- Manage the fire tower on Sugar Camp Hill according to the needs of the DNR's fire detection program.
- Maintain the existing snowmobile trail that passes through this area and crosses the Brule River via the Co-op Park Bridge. ATV use of this trail would be limited to winter when snowcover is sufficient. Winter motorized recreation is popular in the Brule region. This trail is a "connector" snowmobile trail that crosses the Brule River State Forest, linking a regional trail network (Watkins et al, 2001).

Area 5- Miller Rd /CCC Square - Management Options

The majority of this management area occurs within the larger Lake Superior Clay Plain ecological landscape. This area, including both private and state owned lands, is approximately 2,400 acres in size. The history of this area includes attempts at pasturing followed by large areas of timber harvesting in the 1960s and 1970s. The resulting

vegetation is primarily large blocks of similar age pure aspen stands, with conifers found primarily on the steeper terrain along river and creek drainages.

No specific management needs for rare or uncommon species were noted in this area by the Biotic Inventory of the Brule River State Forest (Epstein et al. 1999). This area currently is occupied by an active wolf pack. Great gray owls have been seen on this and adjacent county lands. This area is also part of the historic clay plain boreal forest (Eckstein 2001). This historic boreal landscape contained areas of younger aspen/birch forest but in a much lower percentage than currently exists here. This younger forest provides high quality habitat for game species such as grouse but is common on other land ownerships in the region (Watkins et al. 2001). Recreational data indicate that while similar game habitat is found elsewhere in the region, the BRSF attracts hunters seeking the unique setting it provides (Watkins et al. 2001). Input on the amount of aspen and grassland that should be maintained within the clay plain was mixed. Some comments favored managing the entire landscape toward conifers and minimizing early successional habitats while others noted the biological and recreational benefits of these early successional habitats. Therefore two options are presented here.

Option 5A – Habitat Management Area:

Management Objectives:

The short-term and long-term objectives of Option 5A are to optimize early successional habitats. Maintain aspen as the dominant forest cover type, but increase the diversity in terms of species and age classes. Maintain high quality habitat for game and non-game wildlife species. Maintain existing wildlife openings in forested areas. Manage stream corridors to promote conifer cover and to retain large woody debris. Preserve and enhance the natural aesthetic quality, particularly in areas seen from the Brule River. Species that would benefit from maintaining early successional habitats range from game species such as ruffed grouse, woodcock, snowshoe hare, deer, and bear to many non-game birds such as golden-winged warbler, yellow-shafted flicker, clay-colored sparrow, and amphibians such as green grass snake and leopard frogs. Predator species that utilize these prey species would be sharp-shinned hawks, broad-winged hawks, fisher, bobcat, red fox, coyote, and timber wolves.

Option 5A- Management Prescriptions:

As appropriate for the specific site, existing ecological communities, wildlife species and timber stand conditions, the following management prescriptions would be used to achieve the long-term and short-term objectives identified above.

- Maintain aspen / white birch on the flatter upland through small patch clearcuts. Retain snag and den trees to provide for cavity nesting birds and animals. Retain individual trees or patches of trees to increase within stand tree diversity. Encourage bur oak, black ash, white spruce, white pine, white birch, and balsam fir to create stand diversity. Where natural seed source no longer exists, trees or shrubs may be planted to provide a future seed source and alternate management options.
- Continue to maintain smaller scattered forest openings through mowing, hand cutting, or limited herbicide applications. Additional openings would be considered and would be developed in conjunction with timber sales to minimize costs.

- Encourage conifers along sloped drainages through selective removal of hardwoods (including aspen), seeding, planting, or allowing natural succession.
- Plant in a natural fashion to avoid a plantation appearance.
- Retain woody debris needed for a variety of wildlife at the base of the food chain, including wood frogs, toads, blue-spotted salamanders, mice, chipmunks, etc.
- Perform timber harvesting only during periods when the soil is frozen or dry.
- Design timber sales to emphasize smaller cut areas and to maximize age-class diversity.
- The portion of the forest visible from the Brule River would have no active management (timber harvest/ground disturbance). Timber salvage operations would not happen within site of the river. The only cutting that would occur along the river would be done to provide a safe experience to users of the forest and river. This cutting would generally not remove the timber products from the areas.

Option 5A- Recreation Management:

- Close the primitive roads within this area to motorized use except to facilitate resource management activities. These roads would be open to hunters and other non-motorized recreators for walking only and may be periodically mowed.
- Maintain the existing snowmobile and winter ATV trail that passes through this area and crosses the Brule River via the Co-op Park Bridge would continue to be open. This trail is a "connector" snowmobile trail that crosses the Brule River State Forest, linking a regional trail network (Watkins et al, 2001).

Option 5B - Native Community Management Area

Option 5B proposes to manage the area to shift it toward an older, more diverse, more conifer dominated forest through a variety of active and passive techniques as described in Management Area 1 – Option 1A.

Option 5B- Management Objectives:

The long term management objective would be to restore this area to a "clay plain boreal forest" with areas of old growth characteristics. This forest was historically dominated by white spruce, white pine, and white birch (the "three whites") along with common associates including white cedar, balsam fir, aspen, and upland tamarack. (Mossman et al. 1997, Bartelt et al. 1999, Eckstein et al 2001). The understory was characterized by a dense growth of alder, beaked hazel and mountain maple. Currently, select areas of the clay plain with better boreal structure have potential for old growth characteristics (Epstein et al. 1999). The "Community Restoration and Old Growth Assessment" recognizes the challenge of restoration in this community type and recommends a varied and adaptive management approach (Eckstein 2001). To maximize the chances of success, the restoration plan would need to be adaptive to things that work and would need to experiment with alternative methods. Techniques that were used in Area 1A and evaluated as being the most successful in restoring boreal forest would be applied. The natural aesthetic quality would be preserved and enhanced, particularly in areas seen from the Brule River.

Option 5B- Management Prescriptions:
As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short term objectives identified above:

Passive Management Areas:

- Perform no forest management in select areas, except as necessary to maintain public safety and control invasive exotic species.

Adaptive Management Areas:

- Identify select uplands dominated by aspen/white birch, grass or brush in order to apply and evaluate various management practices in an effort to achieve the short and long-term objectives. Techniques used in different areas would include:

  - harvesting timber to remove overstory aspen or other hardwood species in order to facilitate conifer planting and to increase the conifer component by allowing in more sunlight to existing conifers.

  -monitor deer browse impacts and provide recommendations on deer herd harvest levels.

  -replicating the natural disturbance process of blowdowns by clearcutting timber in small (2 to 10 acre) irregular areas, if possible, in range of a seed source. These harvests would be designed to promote regeneration of the "three whites" which require partial sunlight. Direct seed or planting if natural regeneration fails.

  -planting various sizes of white spruce, white birch, white cedar and white pine in a naturalistic pattern, in some of the disturbance areas described above or in natural openings,. Some areas may employ techniques to minimize deer browse impacts.

- To the maximum reasonable extent, limit logging operations to periods when the soil is dry or frozen.
- Reduce peak storm water flows to the Brule River by plugging old drainage ditches to re-establish sheet flow of water across the landscape.

Option 5B- Recreation Management:
Recreational Management for Option 5B would be the same as indicated under Option 5A.

Comparison and Evaluation of Management Options 5A and 5B:
Under Management Option 5A, the flat, upland forest areas would remain dominated by early successional, aspen/white birch cover but with a slowly increasing diversity of trees. This type of forest cover is typical of natural conditions following a windstorm, insect outbreak, or wildfire that historically occurred in a smaller percentage of the area throughout this land-type. The cover on the slopes near and along the streams would be dominated by older conifers. Small areas of existing grassland, brush land and wetlands would be maintained. Wildlife openings within forested areas would be maintained or increased. Option 5A would continue to provide habitat for the unique combination of hunting and

other recreational opportunities provided by the Brule River State Forest (Watkins et al. 2001).

The grasslands and brush lands would provide habitat for a variety of game and non-game wildlife species, as well as, grassland birds such as upland sandpiper and sharp tailed grouse (Epstein et al. 1999). Some of the other benefactors would include songbirds such as eastern meadowlarks, clay colored sparrows, and bobolink. The grasslands would also provide summer habitat for leopard frogs, nesting habitat for waterfowl, grazing and fawning areas for deer, and year-round habitat for sharp-tailed grouse. Wildlife species that benefit from the early successional forest include a variety of declining songbird species such as golden-winged warblers and several game species. Ruffed grouse, woodcock, deer, and bear habitat would be optimized.

Option 5A would produce regular changes to the vegetation through timber harvest, mowing, burning etc. These activities will have impacts on the aesthetic qualities of the area. Some of these activities will require staff time to conduct, while others such as timber harvest are conducted by contractors. Generation of these forest products generates revenue for the state and provides a product to the local community.

Under Management Option 5B, forest cover would be managed to change it from an a aspen dominated cover to a conifer dominated "boreal forest" community. The small areas of brush and grassland would be managed toward a boreal forest community. As described earlier, accomplishing the objective of restoring the existing communities to boreal forest will be difficult and would require an adaptive approach. This adaptive approach would apply the lessons learned from the various restoration techniques used and evaluated in the management of the Lake Superior Clay Plain- Native Community Management Area. Option B would require the establishment of a seed source through planting. Plantings would be done under sparse forest canopies, openings, and in recently harvested areas. Openings would no longer be maintained. These more successful techniques would facilitate the transition to boreal forest by attempting to establish the desired boreal tree species. Within several decades a decrease in the aspen, grass and brush cover would be associated with an increase in the conifer cover.

The active management actions in option 5B would create regular changes to the vegetation thus impacting the aesthetics of the area. Both short term (timber harvest, planting, site preparation) as well as long term (change from open grass/brush to trees) changes would be observed. This option would continue to generate forest products but with a general reduction in aspen products.

Both options present different benefits to the wildlife, natural communities and human users of the BRSF. At this time the department has not selected a preferred option for managing this tract. These two options are being presented in order to generate additional public input on the future management of this area.

Area 6- Riverway– Scenic Management Area

This area, including both private and state owned lands within the current project boundary, is approximately 3,900 acres in size. It encompasses an area that runs from the southern end

of Big Lake to the southern edge of the utility corridor that runs in an east/west direction and is located just north of Sugar Camp Hill.

The section of the Riverway Scenic Management Area north of Highway 2 primarily occurs within the Lake Superior Clay Plain- Ecological Unit. The river within this stretch follows a serpentine course with steep clay slopes along the banks. Forest cover types vary through this area with common types being ash and alder dominated floodplain forest, upland aspen, mixed aspen/fir forest, boreal mixtures of pine/hardwood/fir/spruce, and northern hardwood forests. The forest cover types change radically north to south along the Copper Range hill as well as with the topography change from the river to the highway.

An undeveloped scenic overlook at Waino Rock exists in this management area. The site identified in the "Biotic Inventory" occurs at the northern edge of this management area (Epstein et al. 1999).

The section south of Highway 2 occurs within the Bayfield Sand Plain- Ecological Unit. Forest cover types in this section include a high percentage of pine types. Other common forest cover types include aspen and mixed hardwoods. The river within this stretch has many wide areas that have local names such as Big Lake, Lucius Lake, and Ashland Lake. Fairly calm water makes this a favorite canoeing stretch for paddlers of all experience levels. Less than 50% of this area is currently under state ownership and many historic, private lodges are located within it.

This area also includes Hoodoo Lake, a 32-acre seepage lake surrounded by private property and located between Highway 27 and Congdon road. The Department will communicate with the property owners surrounding the lake about the protection of a number of rare species in this location. Refer to the "Biotic Inventory" for additional information regarding Hoodoo Lake (Epstein et al. 1999).

Developed recreational sites within this management area include a number of angler parking areas along Highway H. Undeveloped hiking trails lead from the parking areas to the river. Ownership patterns within this unit are approximately 50% state owned, with many small private parcels and residences within this area.

Area 6- Management Objectives:
The short-term and long-term management objectives are as follows:
Preserve and enhance the natural scenic quality in this corridor, particularly in areas seen from the Brule River, its tributaries, lakes, and designated public use areas. The vegetation would be characterized by a mature conifer dominated forest of especially large diameter (more than 12 inch diameter at chest height) northern hardwoods, long-lived conifer species such as red pine, white pine, and white spruce. Provide habitat for a diversity of game and non-game wildlife.

Area 6- Recreational Use Setting Subclassification:
The Riverway– Scenic Management Area would be managed as a Type 3 recreational use setting. The objective for a Type 3 setting is "to provide readily accessible areas with modest recreational facilities offering opportunities at different times and places for a variety of dispersed recreational uses and experiences" (NR 44.07).

Area 6- Management Prescriptions:
As appropriate for the specific site, existing ecological communities, and scenic resources, the following management prescriptions will be used to achieve the long-term and short term objectives identified above.

Areas visible from the Brule River, its tributaries, lakes, and designated public use areas:

- The portion of the forest visible from the Brule River would have no active management (timber harvest/ground disturbance). Periodic disturbances such as windstorms or high water conditions would create disturbances, which would regenerate this forest type. Timber salvage operations would not happen within site of the river. The only cutting that would occur along the river would be done to provide a safe experience to users of the forest and river. This cutting would generally not remove the timber products from the areas.

Areas other than those visible from the Brule River, its tributaries, lakes, and designated public use areas:

- Use various methods to encourage long-lived species according to the forest cover type using active management on a very limited basis.
- Encourage existing aspen stands to succeed to a more boreal mixture of conifers through a combination of active and passive management. Any cuts would generally be small in size (20 acres or less), and would be replanted or seeded with boreal conifers (white pine, white spruce, and white cedar). The harvesting would involve leaving a minimum of 25% crown closure as a residual stand to discourage aspen regeneration. Harvest operations would be limited to frozen or dry ground conditions to prevent soil erosion.
- Manage the existing hardwood types (primarily oak and poor quality northern hardwood stands) through light thinnings on a periodic basis designed to promote the growth of large diameter trees. These thinnings would be basically done as sanitation cuts by removing weak and diseased trees while providing space for preferred species. Long-lived species such as oak, sugar maple, and pine species would be encouraged within this management unit.
- Manage existing conifers to maintain a natural appearance, with natural stands primarily left alone for nature to manage.
- Periodically thin pine plantations in order to create a natural pattern of large diameter trees with a natural aesthetic appearance.
- Grow pine on extended rotations (150+ years of age) using natural regeneration systems to produce a new stand of trees.
- Use "shelterwood" harvesting to regenerate stands, as this system leaves a large number of "seed" trees to minimize the visual impact.
- Plant a native mix of trees, primarily red and white pine, in a scattered, natural pattern when natural regeneration fails.

- In the event of a catastrophic event such as a windstorm, fire, or flood, use timber salvage operations to clean up the areas affected by the event.
- Use of herbicides will be avoided in the Promontory cliff (Waino Rock) area, as suggested in the Biotic Inventory (Epstein et al. 1999).

Area 6- Recreation Management:

- Primitive trails following both sides of the river have existed for generations and are used primarily by anglers. Concern for water quality may suggest that these trails be further developed and managed to maintain trail tread and prevent erosion. These trails could serve a dual purpose by providing miles of hiking opportunity for persons wishing to visit the lower river. Existing angler parking lots would serve as trailheads with interpretive signage and maps located periodically along the trail system. This trail system would link with the Old Bayfield Road Hiking Trail.
- The management of the Copper Range Campground and Canoe Landing is designated as a Recreation Management Area and its management and recreational use setting subclassification is described under that section.
- Renovate primitive angler trails on both sides of the river to maintain trail treads and prevent erosion.
- Install interpretive signage and maps at existing angler parking lot trailheads and at key points along the trail system.
- Maintain existing parking lots in their current condition. No additional parking lots, paving and/or restroom construction are proposed. The maintenance of current facilities would preserve the rustic quality of the site.
- Educate river users to ensure that all trespass laws are observed so that private property rights are not compromised.
- Develop a parking area and primitive trail access to the Waino Rock (the Promontory) overlook. The parking lot at the trailhead would be designed to accommodate approximately 6-8 cars.

The Brule River Ecosystem

The Brule River Ecosystem includes the Bois Brule River, its tributaries, the Brule Spillway and Bog. These elements are considered a complete "system" in this master plan, and as one of the key features of the Brule River State Forest. It occurs within the larger "Bois Brule Watershed (LS04)" described in the Lake Superior Water Quality Management Plan, April 1998.

One of the most important elements of the Brule River State Forest is the Brule River itself. Associated with the spillway of the upper Brule River are extensive forested wetlands of white cedar, spruce, and balsam fir. Terraces along the slopes leading out of the spillway once supported red and white pine forests. Today, some remnant areas of these original red and white pine forests remain, but significant acreages of pine plantations now cover these terrace areas. Numerous springs and forested seeps occur within the spillway. Old growth forests of white cedar, white pine, and red pine occur on private lands within the boundary of the state forest.

This ecosystem provides opportunities for management of high quality stands of conifer swamp, pine forest, and alder thicket, many with rare species that occur in the Brule Spillway and Bog. The management opportunity for spring ponds and seepages along this stretch of the river is also significant. (Bartelt, et al. 1999).

Area 7- Bois Brule River - Recreation Management Area

The Bois Brule River – Recreation Management Area stretches approximately 44 miles from its headwaters near Lake St. Croix to its mouth at Lake Superior. The management area would include the area of the river extending to the "ordinary high water mark" along the shoreline, all of the canoe landings with their accessory facilities, including parking areas, restrooms, signage, etc. and the angler parking lots located at various points along the river's course. This area is approximately 200 acres in size.

The Bois Brule River is one of Wisconsin's most famous and scenic trout streams. The Brule has attracted fisherman locally, regionally and nationally, even serving as a retreat for several U.S. Presidents and other dignitaries. Today, the 44 mile Bois Brule River draws an estimated 33,000 fisherman annually. Due to its size, a steady flow of cool spring water and its highly productive, self-sustaining fishery, the Brule is considered one of the premier trout streams in the lake states. (pers. com. D. Pratt, Dec. 2000) Access to the river is provided at boat launch sites and maintained public parking lots.

The river has two distinct and very different fisheries (Watkins et al. 2001). One features a resident population of brook, brown and rainbow trout located primarily in the river's upper half, upstream of State Highway 2. The other is a Lake Superior-run (migratory) salmonid population (i.e. steelhead, brown trout and coho salmon) downstream of Highway 2. This fishery attracts the bulk of the angling attention. More than 80 percent of the fishing trips target the lake-run fish, primarily during the spring and fall fish runs.

The upper Brule River supports the largest naturally reproducing population of brook, brown and rainbow trout of all the Lake Superior tributaries in the region. The river's

headwaters wind through conifer swamps with abundant springs and deep pools. Water temperatures and flows here remain highly uniform throughout the year. Some of the best fly-fishing occurs in the stretch between County Highway S and County Highway B. This reach of the river is slow and wide, punctuated in places by small rapids and riffles. Heaviest fishing pressure occurs in May and June. Annually, an estimated 6,000 fishing trips target the upper river's resident trout.

The other Brule fishery, the lake-run fishery, is in the river's lower reaches downstream of Highway 2. Fishing here targets large, rainbow (steelhead) and brown trout in spring and fall that ascend the river to spawn. Crowds of anglers line the banks at peak times hoping for a chance to hook one of the big fish. Overall, Brule angling activity is heavily directed at the lake-run fish on the lower river, with an estimated 27,000 trips annually, or over 80 percent of the total fishing trips on the Brule. The fishing season on the lower river, geared to the lake-run fishery, is much longer than the general fishing season. The season opens on the Saturday nearest April 1st and continues through November 15.

Just as the river has two distinct fisheries, it has two personalities, adding to the difference in fishing experience between the upper and lower river. While the upper river is rather boggy and tranquil, the lower river picks up speed as it falls abruptly to Lake Superior along steep clay banks. The final 18 miles are nearly continuous class I-II rapids.

The production capability of the Brule is unparalleled in the region. The river supports the largest resident trout population of all Wisconsin's Lake Superior tributaries and is a very important spawning and rearing area for lake-run salmonids. Of all the streams in the region, it produces the highest number of lake-run fish to the Lake Superior fishery (nearly one quarter of Wisconsin's total), supporting an estimated 54,000 total recreational angling trips per year, split equally between the river and lake. (pers. com. F. Pratt Jr., 2000).

Tributaries of the Brule River with trout fisheries include Wilson Creek in the Brule headwaters, the Little Bois Brule River, and Nebagamon Creek, which is joined by Blueberry Creek and flows into the Brule upstream of Highway 2. These and other creeks provide spawning sites for Brule River trout. Additionally, the St. Croix Creek is a small cold water trout fishery that flows into Lake St. Croix southwest of the Brule River.

In summary, the Bois Brule River, Wisconsin's largest spring-fed tributary to Lake Superior, is unique in the region and is the primary angling attraction in the state forest. The river and its tributaries support two different high quality, naturally self-sustaining fisheries, one featuring resident trout and the other lake-run trout and salmon. This unparalleled trout stream further distinguishes itself among anglers by being highly scenic and accessible by canoe throughout nearly its entire length.

All of the existing designated canoe landings on the Bois Brule River that are located within the BRSF are included in this Recreation Management Area. They are as follows:

County Road "P" Canoe Landing.....	T45N, R11W, Sec 8
Stone Chimney Canoe Landing.....	T46N, R11W, Sec. 35
Stones Bridge Canoe Landing and Parking Lot...	T46N, R10W, Sec 30
Winneboujou Canoe Landing.....	T47N, R10W, Sec 34
Bois Brule Campground Canoe Landing.....	T47N, R10W, Sec. 23
Highway 2 Canoe Landing and Parking Lot.....	T47N, R10W, Sec. 14
Copper Range Campground Canoe Landing	T48N, R10W, Sec. 26
Pine Tree Canoe Landing.....	T48N, R10W, Sec. 26
Highway 13 Canoe Landing and Parking Lot.....	T49N, R10W, Sec. 34
Mouth of the Brule Boat Landing /Parking Lot...	T49N, R10W, Sec. 10

The Brule River Recreation Management Area also includes the angler parking lots and the angler trails that provide access from the lots to the river. These lots have gravel surfacing and include no other facilities. The names and locations of the angler lots are as follows:

Old Weir Parking Lot.....	T49N, R10W, Sec. 10
Clay Avenue Parking Lot.....	T49N, R10W, Sec. 10
Saari's Parking Lot	T49N, R10W, Sec. 15
Mandelin's Parking Lot.....	T49N, R10W, Sec. 22
Harvey Rd. Parking Lot	T49N, R10W, Sec. 15
Cloverland Dump Parking Lot.....	T49N, R10W, Sec. 22
Wilgren Parking Lot (Lenroot Rd.)	T48N, R10W, Sec. 23
Coop Park Bridge Parking Lot.....	T48N, R10W, Sec. 26
High Landing Rd. Parking Lot	T48N, R10W, Sec. 26
White Pine Parking Lot	T48N, R10W, Sec. 35
Roadside Parking Lot.....	T47N, R10W, Sec. 2
Patton's Parking Lot.....	T47N, R10W, Sec. 11
County Trunk "FF" Parking Lot	T48N, R10W, Sec. 22
Stone Chimney Parking Lot	T46N, R11W, Sec. 35
Mays Parking Lot	T48N, R10W, Sec. 15
Clay Rd. Parking Lot	T48N, R10W, Sec. 10
McNeil's Landing Upper Parking Lot	T49N, R10W, Sec. 27
McNeil's Landing Lower Parking Lot.....	T49N, R10W, Sec. 22

Area 7- Management Objectives:
The long-term objective for the Brule River Recreation Management Area is to preserve the scenic quality and provide opportunities for angling, canoeing, and kayaking. All these activities have a long and rich history on the Brule River and have a place in its future. Implicit in the objective is to manage the relationships between these user groups.

The short-term objectives are to reduce river user conflicts, reduce or eliminate any degradation of the river's natural aesthetic quality and ecological systems resulting from over-use. The "Recreational Supply and Demand Assessment" reports that as the intensity of river use grows, conflicts and impacts have the potential to increase further (Watkins et al, 2001). Input received concerning this area has generally agreed on the objective that the current impacts caused by river access during periods of peak use should be limited by some means. The current levels of use threaten to damage the riparian and aquatic ecosystems and result in other problems such as user conflicts between anglers and paddlers, excessive noise levels, trash, overcrowding of parking areas and a less enjoyable experience for visitors and residents. However, there were varying opinions on how levels of impact and conflict should be reduced. This aspect of management is examined in Management Options 7A and 7B.

Area 7- Recreational Use Setting Subclassification:
The section of the Bois Brule River south of the Stones Bridge landing would be managed as a Type 2 recreational use setting. The section of the Bois Brule River extending from the Stones Bridge landing to just south of the boat landing at the mouth a would be managed as a Type 3 recreational use setting. The section of the river extending from the boat landing at the mouth to Lake Superior would be managed as a Type 3- motorized recreational use setting. The recreational use settings would be the same for both options 7A and 7B.

Option 7A- Preferred

Option A proposes to accomplish the management objectives through the on-going involvement of the public in the management of the recreational use of the river. It proposes to educate river users and to create a culture of respect and tolerance between the anglers, property owners, and the canoeist / kayakers. If additional Rangers were approved, they would provide user orientation and education regarding river use, etiquette, and appropriate disposal of refuse, along with the use of interpretive signage.

Option 7A- Management Prescriptions:
As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short-term objectives identified above:

- The only timber salvage cutting that would occur in this zone would be done to provide a safe experience to users of the forest and river. This cutting would generally not remove the timber products from the area.

Option 7A- Recreation Management:
By its nature, management for recreation must be responsive to recreational trends and the demands of the public. Since the last master plan was written, more people than ever are participating in these river based sports (Watkins et al. 2001).

In order to accommodate resolution of dynamic recreational management, interested members of the public, other public agencies, elected officials and other governing bodies

will be invited to provide input at the BRSF biannual meetings held in the spring and fall of each year. These meetings would be hosted and facilitated by DNR staff and would be publicly noticed. A spring meeting would consider trends in the sports and advise areas of emphasis for management of the river's recreation resources. Other discussion would focus on proposed timber sales and other significant management activities. A fall meeting would be facilitated to critique previous season operations and recommend improvements. Recommendations from the group would be taken into consideration by the forest superintendent and if significant deviations from the master plan were required, these issues would be publicly discussed and, if necessary, follow master plan, variance, amendment or revision procedure.

Canoeing and Kayaking:

- A program of ethics education would be developed to promote responsible use and awareness of regulations. This program would use direct personal contact and non-personal methods like signs and audio.
- An interpretive system would be developed at each of the designated watercraft landings and at the St. Croix Picnic Area with a theme of the importance of the Bois Brule River through history. Each site would have a different message, encouraging visitors to stop and put a whole story together. A rustic, CCC era aesthetic character would be developed in the interpretive signage, using round wood construction and rustic routed wooden signs in a historic font. Opportunities for this type of user education were identified in the Environmental Education and Awareness Assessment (Fannucchi et al, 1998).
- The river would continue to be closed by state statute to all inflatable devices including innertubes, fishing rings, rafts, inflatable kayaks, and others.
- All landings would be posted as "quiet zones" in compliance with NR45.04 (3) k.
- A new watercraft landing would be developed on the south side of County Highway FF on the west side of the river.
- A small boat landing would continue to be maintained at the mouth of the Brule. Motorized boating would be permitted from the mouth to the old weir site.
- Additional enforcement of regulations would be sought.
- Wells for drinking water supply and restrooms would be provided at Stone's Bridge, the Bois Brule landing (new), Pine Tree, and FF.
- A landing would also be authorized at the end of the Portage Trail so that paddlers interested in retracing this historic route could do so.
- Continue to provide parking for approximately 30 cars, a small boat landing, pit toilets, informational facilities, a well with a handpump, and several picnic tables on the east side of the mouth of the Brule River.

Angling:

- Existing angler parking lots would be maintained at their current level of development.
- Some angler trails along the river would be developed into hiking trails and treated to reduce erosion.
- Regulations would continue to be administered by Fisheries. Catch and release would be encouraged.

Other Recreation Management:

- Kiosks would be placed at the designated watercraft landings and popular angler parking lots explaining the rules of the river and user ethics as well as explaining the role of the Brule River State Forest.
- Additional Rangers would provide user orientation and education regarding river use and paddling skills where and when appropriate.
- Effort would be made to reduce the amount of litter on the property by continuing to promote a carry-in/carry-out philosophy. This "Leave-No-Trace" emphasis would continue to be supported by use of the LNT program and literature developed by the Sigurd Olson Institute of Northland College.

Fish Habitat Management:

- The river would continue to be managed for quality angling opportunities.
- Downed and fallen trees in the river that provide important fish habitat but are not deemed safety hazards to navigation will be left in the river.
- Continue in stream maintenance of restored fish habitat areas (gravel additions, log habitat, etc.)
- Continue to control beaver populations on the tributaries to protect fish habitat and assure fish movement. Beaver control should only be considered on designated trout water and specific ecologically sensitive sites. Actual removal should only be done for resident beaver as evidenced by beaver houses, lodges, or bank dens and not during spring dispersal that is critical to allow beaver to travel throughout the area and settle in other suitable sites.

Land Management:

All management activities in the areas visible from the landings would be performed with the goal of preserving the existing natural aesthetic quality. The construction of visible structures and activity areas should be minimal and incorporate vegetative buffering whenever possible. Any new structures in this area would be designed with a rustic, CCC era aesthetic character.

Option 7B

Option 7B proposes to accomplish the objective primarily through tighter restrictions on user numbers for watercraft and anglers entering the river through state owned lands, as well as time scheduling by time of day or day of week.

Option 7B- Management Prescriptions:

As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short-term objectives identified above:

- Option 7B would include the management prescriptions included under Option 7A except it would limit the number of river users entering the river through state owned lands, during periods of peak use. Option 7B would impose tighter restrictions on user numbers for watercraft and anglers as well as time scheduling by time of day or day of week.
- Remove more downed trees from the river.
- No new landing would be constructed at FF and this would continue to be a prohibited landing.

Comparison and Evaluation of Management Options 7A and 7B:
Option 7A attempts to balance the needs for a safe river to travel on and the habitat needs for improved angling. Possibly the most significant proposal in Option 7A is the watercraft landing at FF. The area is located just downstream of the Lenroot Ledges area, one of the most technically challenging areas on the river for canoeists and kayakers. Consequently there are frequent upsets there and people end up taking out for safety reasons. Additionally, the trip from the Pine Tree Landing to the Highway 13 Landing is a long and fatiguing trip. The possible outcomes of adding the landing at FF would be little net increase in the numbers of people on the river but that people would take shorter trips. Paddlers would be more likely to take out or put in at FF, and fewer people would travel from Pine Tree to Highway 13. This would reduce the user conflicts between anglers and paddlers on this lower section of the river. Also, an effort would be made to teach ethics in order to mitigate user conflicts.

Option 7B proposes to limit the number of watercraft and possibly anglers allowed to enter the river through state owned lands, on each stretch of the river. This approach to limiting the number of users on the river during periods of peak use would be a more direct approach to addressing the issue. However, it would likely require additional staffing.

Option 7B would also result in less wood in the river and consequently would lower the quality of the fish and invertebrate habitat while making paddling safer and easier. Option 7B was not considered as preferred at this time in order to attempt other methods that are less restrictive yet are intended to have the result of reducing conflict.

Area 8- Brule River Bog - Native Community Management Area

This management area occurs within the larger Brule River System ecological landscape. This area, including both private and state owned lands, is approximately 6,000 acres in size. It extends to the top of the slopes adjacent to the Bog leading out of the valley on both sides of the river from Upper St. Croix Lake to just south of Big Lake on the Brule River. Primarily, this management area consists of the spillway and bog area adjacent to the river and the surrounding lowland forest associated with the river. This lowland coniferous forest is comprised of a mixture of northern white cedar, tamarack, black spruce, and balsam fir. Several upland ridges are located within the swamp near the headwaters of the East Fork of the Brule and vegetation consists of red pine plantation, jack pine, and aspen.

This is considered the least disturbed ecosystem on the Brule River State Forest. It contains many rare species and currently has two designated state natural areas. Very little management occurs in this area. The last cutting in the bog area was in 1980 as an experiment to regenerate cedar. The severe hailstorm in August of 2000 may radically alter forest composition in areas within and adjacent to the Bog.

This management unit encompasses the majority of the Brule Spillway macrosite as listed in the Brule River State Forest Biotic Inventory (Epstein et al. 1999). The upstream wetlands within this management area are in a unique ecological and hydrological setting because they are at the headwaters of both the St Croix and Brule River watersheds (Bartelt et al. 1999, Epstein et al. 1999). The wetlands, springs, spring ponds and streams within the management unit support rare plants and invertebrates. In addition, the downstream water quality and quantity is dependent upon the integrity of these upstream wetlands. Periodic monitoring of the water quality and plant composition is important to assuring the long-term sustainability of this area (Epstein et al. 1999).

Development of an old growth lowland forest in this area has good potential but poor reproduction of white cedar is a concern (Mossman et al. 1997, Epstein et al. 1999, Eckstein et al. 2001). This forest supports a number of bird species normally found in forests further north and is known by bird watchers as a unique area.

Area 8- Management Objectives:

The long-term management objectives are as follows:

Maintain several thousand acres of high quality forested and shrub wetlands for ecological, water quality, and habitat values. The vegetation would be characterized by wetlands and lowland forest associated with the river comprised a mixture of northern white cedar, tamarack, black spruce, and balsam fir. Several upland ridges are located within the swamp near the headwaters of the East Fork of the Brule and dominant trees there would consist of red pine, jack pine, and aspen. Preserve the existing bird habitat. Preserve and enhance the natural aesthetic quality, particularly in areas seen from the Brule River, the Bog, its tributaries, lakes, and designated public use areas. Preserve the water quality of wetlands, springs, spring ponds and streams within the management area.

The short-term objective for the Brule River Bog is to assess research needs and options within the bog area, and the need for exotic species control. Create a more natural appearing stand of pine in the existing pine plantations on the upland ridge located by Beaupre Springs, establishing a diverse community of native species and encouraging the natural regeneration of pines.

Area 8- Management Prescriptions:

As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short-term objectives identified above:

- Limit management in the bog area to research and the monitoring and control of invasive exotic species. Exotic species to watch for in the bog area include glossy buckthorn and purple loosestrife. Research would be driven based upon findings of previous research work done in this area.
- No timber harvesting would be performed within the bog area except on the upland ridge located by Beaupre Springs that contains a large pine plantation with a road to it.
- Selectively thin existing pine plantations in stages to create a more natural appearance and encourage a more diverse understory.
- The portion of the forest visible from the Brule River, its tributaries, the bog, lakes, and designated public use areas would have no active management (timber harvest/ground disturbance). Timber salvage operations would not happen within sight of the river. The only cutting that would occur along the river would be done to provide a safe experience to users of the forest and river. This cutting would generally not remove the timber products from the areas.

Area 8- Recreation Management:

- Maintain the portion of the existing Historic Portage Trail that extends into the Bog Area as a lightly developed trail.
- Close the primitive roads within this area to motorized use except to facilitate resource management activities. These roads would be open to hunters and other non-motorized recreators for walking only and may be periodically mowed.
- Maintain existing canoe landings.

Area 8- Fire Control:
In light of the goal to protect this fragile ecosystem, a fire management plan will be developed to outline suppression techniques and strategies in case of a wildfire.

The Bayfield Sand Plain- Ecological Landscape

Subsection 212Ka (National Hierarchical Framework of Ecological Units)

"Major significant ecological management opportunities for the Bayfield Sand Plain ecological landscape (Section 212Ka) exist for the northern dry forests, northern dry-mesic forests, and pine barrens communities. The globally rare pine barrens community is found in this area and in adjacent private lands. This represents one of the best opportunities to restore this community type on a large scale in Wisconsin. However, the current size and shape of the property and dominant land uses in the surrounding landscape may limit a large-scale conservation opportunity. Large sedge meadows, marshes, and wild rice beds exist here, which are significant. Kettle lakes are numerous in part of the Subsection. The St. Croix-Namekagon and Brule River systems occur here and are both unique and significant resources" (Bartelt, et al. 1999).

The sand plain is an extensive area of droughty soils that was formerly a jack pine barrens with some smaller areas of mature red pine forest. The jack pine barrens were maintained by frequent wildfire set by Native Americans and lightning. Today, forest plantations of red pine and jack pine dominate the sand plain. In some areas scrub oak has become established in large stands. The Gordon Unit of the state forest is also within this ecological unit.

Area 9- Copper Range Campground - Recreation Management Area

The Copper Range Campground is located 4 miles north of Highway 2 on Highway H (see Map 3). The existing campground is approximately 10 acres in size, however the proposed management area is approximately 30 acres in size. All of the 19 existing campsites are universal. There is a single contemporary pit toilet and a handpump to serve the campground. The campground is popular with anglers in the spring and fall and fills many weekends in the summer. It is located convenient to favorite fishing holes and canoe routes. A canoe landing is located a short walk from the campgrounds. Research and comments have indicated that campers value this campground for its rustic character. Research also indicated that campers highly value secluded campsites ("Recreational Supply and Demand Assessment", Watkins et al. 2001).

Area 9- Management Objectives:

The short-term and long-term management objectives for the Copper Range Campground Recreation Management Area are to provide, maintain and consider the expansion of camping and other public outdoor recreation opportunities, which are consistent with a Type 4 recreational use setting. Maintain a connection to the Copper Range Canoe Landing. Consider the feasibility of expanding the boundary of the campground area, adding more campsites and providing additional spacing and buffering between site consistent with a Type 3 recreational use setting.

Area 9- Management Prescriptions:

As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short-term objectives identified above:

- Manage vegetation to develop large pines that dominate and to increase the vegetative screening between the sites either through natural means or planting of appropriate species.
- The portion of the forest visible from the Brule River, its tributaries, lakes, and designated public use areas would have no active management (timber harvest/ground disturbance). Timber salvage operations would not be performed within sight of the river. The only cutting that would occur along the river would be done to provide a safe experience to users of the forest and river.

Area 9- Recreational Use Setting Subclassification:

The Copper Range Campground - Recreation Management Area would be managed as a Type 4 "rustic" campground.

Area 9- Recreation Management:

- Electrical hookups are specifically prohibited in the campground except to facilitate a campground host site and to operate a pressurized water supply. The Recreational Supply and Demand Assessment indicated a strong preference among Brule River State Forest campers for rustic facilities, which would not include electric hookups, flush toilets, or showers. (Watkins et al, 2001)
- Flush toilet and shower facilities are specifically prohibited.
- Remove the boulders and posts used to define the limits of the campsites. Sites would be defined by plantings and pad maintenance, in keeping with the natural qualities and rustic character of the area.
- Develop a small overflow parking area with a 5-car capacity. This development would address crowding and an increase in user numbers identified in the Recreational Supply and Demand Assessment. (Watkins et al, 2001)

Area 10- Bois Brule Campground - Recreation Management Area

The Bois Brule Campground is a 23-unit rustic campground located between the Bois Brule River and Ranger Rd. just north of the Forest Headquarters (see Map 3). This area is approximately 5 acres in size. It has 19 existing universal campsites and 4 walk-in campsites. The campground is popular, filling most weekends during the summer. One pit toilet constructed in 2000 and another pair of pit toilets of a late 1960's vintage serve the campground. There is a single handpump. Research and comments have indicated that campers value this campground for its rustic character. Adjacent to the campground is a picnic area and canoe landing.

Area 10- Management Objectives:

The short-term and long-term management objective for the Bois Brule Campground Recreation Management Area is to provide camping and other public outdoor recreation opportunities, which are consistent with a Type 4 recreational use setting.

Area 10- Recreational Use Setting Subclassification:

The Bois Brule Campground - Recreation Management Area would be managed as a Type 4 "rustic" campground. The objective for a Type 4 setting is "to provide areas offering opportunities for intensive recreational uses and experiences." "A rustic campground shall have fewer than 75 total campsites, and the distance separating the campsites shall be 100

feet to 200 feet but may be greater. Campgrounds established prior to September 1, 1996, which have more than 75 campsites or do not meet the separation distance standards, but otherwise meet the standards of this subdivision and are capable of substantially providing a rustic campground experience, may be assigned this classification" (NR 44.07).

Area 10- Management Prescriptions:
As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short term objectives identified above:

- Manage forest vegetation to develop the large red pines that dominate and to increase the vegetative screening between the sites either through natural means or planting of appropriate species. Campers highly value secluded campsites, according to the Recreational Supply and Demand Assessment (Watkins et al, 2001).
- The portion of the forest visible from the Brule River, its tributaries, lakes, and designated public use areas would have no active management (timber harvest/ground disturbance). Timber salvage operations would not be performed within site of the river. The only cutting that would occur along the river would be done to provide a safe experience to users of the forest and river.

Area 10- Recreation Management:

- Consider feasibility of expanding the campground area, adding more campsites and providing additional spacing and buffering between sites consistent with a Type 3 recreational use setting.
- Electrical hookups are specifically prohibited in the campground except to facilitate a campground host site and to operate a pressurized water supply. Brule River State Forest campers indicated a strong preference for rustic facilities, which would not include electric hookups, flush toilets, or showers (WDNR, 2001).
- Flush toilet and shower facilities are specifically prohibited.
- Construct a group camp facility north of the current Bois Brule Campground. This facility would consist of 4 distinct sites, each capable of accommodating 20 people. There would be a central parking area for 20 cars, a pit toilet and a pressurized water supply connected to the well in the Bois Brule Campground. This development would accommodate an increase in campers and address concerns about crowding identified in the Recreational Supply and Demand Assessment (Watkins et al, 2001).
- The Stony Hill Nature Trail is located adjacent to the campground. This trail would be relabeled with the interpretive theme of the unique cultural history of the Brule River Valley, including the significant contribution of the CCCs stationed at the Brule CCC camp. Opportunities to educate the public about the cultural history of the Brule River Valley were identified in the Environmental Education and Awareness Assessment, as well as by the Brule River State Forest staff and the public (Fannucchi et al, 1998).
- The Stony Hill Nature Trail should be used as a trail link to connect the campgrounds with the fish hatchery, ultimately linking the headquarters, After Hours Trail System, the North Country Trail, and the proposed group campground. These trail linkages would provide greater access and mobility to hikers and other non-motorized recreators.

Area 11- After Hours - Recreation Management

The After Hours Recreation Management Area is located south of Highway 2 and west of the Bois Brule River. This area, including both private and state owned lands within the current project boundary, is approximately 2,200 acres in size. It is across the river directly

west of the Ranger Station. The current forest cover in the After Hours Recreation Management Area consists primarily of a deciduous and conifer mix. It includes the After Hours Ski Trail system, which is an extremely popular cross-country ski area well known for its excellent grooming and dependable snow coverage. The system is currently about 8 ½ miles and is gently rolling. Parts of the trail travel along the old rail grade. The trail has easy and difficult entry loops and three linking loops that are groomed for both classic and skate skiing styles.

Area 11- Management Objectives:
The short-term and long-term objectives for this area are to continue to manage it as a type 3 recreation use setting for high quality cross-country skiing opportunities in the winter and provide hiking and hunting opportunities during the other seasons. The Recreational Supply and Demand Assessment, as well as other input on existing recreational facilities such as the After Hours ski trail indicated a demand for more cross country ski trails. (Watkins et al, 2001) To fulfill this demand, the general character of the facility should be maintained but the trail should be extended to accommodate greater demand.

Area 11- Recreational Use Setting Subclassification:
The After Hours - Recreation Management Area would be managed as a Type 3 recreational use setting.

Area 11- Management Prescriptions:
As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short-term objectives identified above:

- Establish a healthy stand of mature long-lived species with emphasis on northern hardwoods, red pine and white pine. Use primarily selection and shelterwood harvests to promote large trees and regenerate the desired species.
- Management would involve small scale actions of 2-5 acres to maintain pine and oak components in this forest.
- Selectively harvest and remove diseased and defective trees to enhance the scenic quality of the area, particularly near trails.
- The portion of the forest visible from the Brule River, its tributaries, lakes, and designated public use areas would have no active management (timber harvest/ground disturbance). Timber salvage operations would not be performed within sight of the river. The only cutting that would occur along the river would be done to provide a safe experience to users of the forest and river.

Area 11- Recreation Management:

- Link the trail to the Ranger Station by constructing footbridges across the Bois Brule River near the location of the old railroad bridge at Little Joe Rapids and again down river of the Bois Brule campground. This would provide an additional loop opportunity and permit management of the trail from the Forest Headquarters.
- Construct trails linking the Bois Brule campground, the proposed group campground, the Stony Hill Nature Trail, the fish hatchery, the CCC camp, the After Hours Ski Trail, and the North Country Trail. These trail linkages would provide greater access and mobility to hikers and other non-motorized recreators.
- Pursue an agreement with the school forest to develop a trekking trail that would create a classic only trail offering opportunity to ski for several hours on one loop. This trail

would accommodate the demand for more cross-country ski trails identified in the Recreational Supply and Demand Assessment (Watkins et al, 2001).

- Two-way trail would be limited to the "main grade" north of "main junction" and that area would be wide enough to accommodate two-way skate and classic grooming. Both styles of cross-country skiing are popular on the Brule River State Forest (Watkins et al, 2001).
- T-intersections would be eliminated and new trail segments constructed where necessary to improve grooming efficiency.
- The trail tread would be improved following best management practices to allow year-round use as a hiking trail.
- An Adirondack style warming shelter would be constructed at a concealed location near a river overlook to provide a rest area and picnic opportunity. Scenic views of the river are highly valued by recreators (Watkins et al, 2001).
- A pit toilet would be provided along the trail at a point roughly the furthest from the headquarters.

Area 12- Administrative - Special Management Area

The administrative area encompasses the Ranger Station, CCC era garages, the maintenance garage, the wildlife and fishery garages, and the open area just north of the fishery garage. This area is approximately 400 acres in size. It is roughly one mile long, running from the end of Ranger Road nearly to Highway 27, and is just north of Stony Hill. The Little Brule River is located within this area, as well as the Brule Fish Rearing Station. A well-recognized scientific research site, approximately 80 acres in size, referred to as the Zagorski Site is also located in this area.

Area 12- Management Objectives:

The short-term and long-term management objectives for this area are to maintain the structures and facilities in this area that provide functions such as forest's headquarters offices, customer service to the public, garages, equipment storage and maintenance. Authorization of any proposed modifications to WDNR administrative offices / buildings would be handled separately from the master plan under the WDNR facilities development process.

Area 12- Management Prescriptions:

As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short term objectives identified above:

Management actions, other than modifications to WDNR administrative offices / buildings, would include the following:

- Construct an open-air rustic shelter on the terrace north of the headquarters building for use during education programs. Opportunities for such education facilities were identified in the Environmental Education and Awareness Assessment (Fannucchi et al, 1998).
- Forest resources would be managed with the objective of developing a stand of large pines.
- Diseased and defective trees would be removed annually.
- If the proposed footbridges were constructed, trail registration could be provided at the Forest Headquarters. The After Hours trail parking and trail access could then be

relocated to the administrative area and the current After Hours trail parking would be eliminated.

Area 12- Cultural Resource Management:

- Preserve, protect and interpret the site of the former CCC camp and develop a non-personal interpretive facility to explain that camp's role in the history of the forest. Opportunities for this type of user education were identified in the Environmental Education and Awareness Assessment. (Fannucchi et al, 1998)
- Preserve and protect the 80 acre Zagorski Site and place a marker in the location where the historic photos were taken.

Area 12- Future Management:

In future master plans or plan variances, consideration should be given to the possibility of adding an interpretive educational center to the forest offices. Possible themes for the interpretive center could include the interpretation of the natural and cultural history of the forest and historic sites, the dynamics of the Bois Brule watershed, the aquatic resources, the Brule fishery and habitat improvement projects, the future of sustainable forestry in Wisconsin, and the demonstration of environmentally sensitive landscape management practices.

Area 13- Troy Pit Pines – Management Area- Options

This management area occurs within the larger Bayfield Sand Plain ecological landscape. This area, including both private and state owned lands within the current project boundary, is approximately 5,800 acres in size. The Troy Pit Pines area is characterized by very sandy soils, a very rolling topography with a mixed forest cover dominated by pine types. Historically, this area had scattered farms that were planted with red pine or jack pine during the CCC era in the 1930s and 1940s. Numerous moderately developed town roads cross this management area. This area is primarily state owned, with only a few private parcels located on the eastern edge.

The area is within the Bayfield Sand Barrens ecological area which naturally supports a variety of disturbance dominated natural communities and has good site potential for growth of pine species (Eckstein et al. 2001). Within this forest production area, there are 3 specific sites that were identified in the "Biotic Inventory", specifically Rush Lake, Kurt's Deep Depression, and Devils Hole Pines. Specific management actions for these areas are noted within the management prescriptions. Management directly surrounding these would be adapted to compliment the management prescriptions for these areas. Other than the Rush Lake site, no rare species were noted in this area (Epstein et al. 1999).

Option 13A- Forest Production Area

Option 13A Management Objectives:

The short term and long-term objectives are to provide a steady supply of renewable forest products while maintaining all characteristics of a dry pine forest. This would include maintenance of primarily pine cover types, with scattered patches of mixed hardwoods.

Maintenance of the pine, oak and aspen forests in this management unit is accomplished effectively through sustainable forest management including timber harvest. The Community Restoration and Old Growth Assessment identifies maintenance of the jack pine

forest through active management as an important opportunity on the BRSF (Eckstein et al. 2001). Maintenance of aspen/birch and oak areas is important to wildlife species and hunting recreation on the BRSF (Watkins et al. 2001).

Preserve Rush Lake's water quality. Promote a late successional stage forest in the Devil's Hole Pines area, dominated by older red pine. Protect the natural stand of red pine and enhance the site by promoting the regeneration of native pine. Provide recreational opportunities, which are compatible with the physical characteristics and other uses in the area, including hunting, nordic skiing and mountain biking.

Option 13A- Management Prescriptions:
As appropriate for the specific site, existing ecological communities, wildlife species and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short-term objectives identified above.

- Manage existing red pine plantations using timber management guidelines found in the DNR Silvicultural Handbook. Practices used would vary by stand condition. Young stands would be released from competing vegetation using a variety of methods, including both mechanical and chemical means. Stands would be thinned based upon established thinning guides. First thinnings would be done once stands become operable and would generally remove entire rows of trees. Subsequent thinnings become much more selective, with the smallest and weakest trees being removed. As stands are thinned, pockets of natural regeneration would be encouraged to grow by removal of overstory where appropriate. This can be done through a variety of even aged silvicultural techniques such as seed tree, shelterwood, or clearcutting. These natural regeneration techniques would be used whenever feasible, but if not successful, the stand would be mechanically prepared for planting, through either trench, furrow, or spot scarification treatments. The stand would then be replanted either by hand or by machine.
- Manage jack pine on a 50-year rotation with natural regeneration techniques being used as the first choice for regeneration. The primary technique used to regenerate jack pine would be to harvest all jack pine and other species within a stand followed by anchor chaining to expose mineral soil and distribute existing seeds across the treated area. Prescribed fire may also be used where feasible. Success of these techniques would be evaluated through a regeneration survey 5 growing seasons after the chaining occurs to determine if jack pine regeneration was successful. If the natural regeneration is not successful, the area would then be planted.
- Maintain current levels of aspen in its present locations for timber production purposes as well as to provide habitat for a variety of wildlife. Differing age classes would be maintained in areas where aspen is most prevalent for optimum wildlife habitat. The aspen would be managed on a 50-year rotation, at which time the stand would require a regeneration harvest. Diversity would be encouraged in the aspen covertype by not requiring all competing species to be cut within regeneration cuts. Very poor aspen sites would be converted to pine through planting of pine species suitable to the site along with site preparation treatments (either mechanical or chemical) to ensure the success of the planting.
- Maintain scrub oak on poor quality pine sites that are not suited for red pine. Small patches (5 acres or less) of this valuable wildlife habitat would not be converted to red pine even if located on a productive red pine site. Stands that are to be maintained as scrub oak would be harvested on a 70-year rotation to maintain a mixture of age classes of this species. The cut areas would be fairly small in size, usually less than 20 acres.

Much of the acreage now typed as scrub oak is actually this mixture of oak, aspen, red maple, and other species. These types would be maintained using patch clearcuts.

- Attempt to maintain white birch in this ecosystem on current sites that have a predominance of birch. This would be done through a combination of timber harvests and soil scarification techniques such as anchor chaining before or following timber harvests. Birch requires mineral soil exposure and full sunlight to regenerate. Generally, the most birch regeneration on the forest is found in the most disturbed areas such as the sides of old skid roads where mineral soil was exposed.
- Encourage a mixture of white pine in all natural stands of trees. Scattered hand planting of this species on suitable sites would be done. This is a species that was historically found scattered across the landscape.
- Attempt to eliminate exotic species such as scotch pine through primarily hand cutting treatments.
- Evenly distribute logging slash across the site following the harvest.

Rush Lake:

- Protect the shoreline from development and damage from off-road vehicles.
- Phase out the pine plantations within site boundary by encouraging natural pine and oak through active, but low impact management practices
- Do not chemically treat or stock the lake with non-native species.
- The portion of the forest visible from Rush Lake, and designated public use areas would have no active management (timber harvest/ground disturbance). Timber salvage operations would not be performed within sight of the lake.

Kurt's Deep Depression:

- No active management is proposed for this site. The "Biotic Inventory" recommends that this site be preserved because it is "exemplary" due to its unusual setting and its apparently intact aquatic biota (Epstein, et al., 1999).

Devil's Hole Pines:

- Preserve the natural stand of red pine.
- Promote the regeneration of native pine through soil scarification in small areas with anchor chains.
- Some areas surrounding the stand of older pine would be encouraged to develop old growth characteristics through the removal of non-pine species through commercial thinning operations.

Option 13A- Recreation Management:

- Maintain the existing snowmobile and winter ATV trail that passes through the area as open for winter use only. It would be closed to motorized traffic the rest of the year. This trail is a "connector" snowmobile and ATV trail that crosses the Brule River State Forest, linking a regional trail network. (Watkins et al, 2001)
- Maintain the existing North Country National Scenic Trail that passes through this area as a lightly developed trail. The Recreational Supply and Demand Assessment indicates the role of the Brule River State Forest in providing this link in an important regional trail. (Watkins et al, 2001)
- Develop a cross-country skiing and off-road bicycling trail system. The Devil's Hole Trail System would be a 20-25 mile network of trails specifically laid out for the purpose of cross-country skiing. Off-road bicycling may be accommodated on these trails and alternate routes would be developed when necessary to accommodate the different uses. These additional trails serve to meet a demand identified in the Recreational Supply and Demand Assessment. This assessment indicated increasing

numbers of mountain bikers and cross country skiers, and reported the findings of a survey of local cross-country skiers, who favored additional trail miles and did not find cross country skiing and mountain biking incompatible trail uses (Watkins et al, 2001).

- Develop a parking lot for the Devil's Hole Trail System with the capacity for 100 cars, a rustic warming shelter with flush toilets, and a separate and concealed maintenance facility. These developments would accommodate the increase in demand for new trails while protecting the natural qualities of the Brule River State Forest.
- The current network of forest roads would be utilized during management activities, and individual roads would be closed based upon the potential for resource degradation. Any new forest roads and drivable skid trails built during forest management activities would be closed following the completion of the timber sale activities. Timber sales that have potential for firewood harvesting would have new roads and skid trails left open for the 2 years following sale closeout. These lightly traveled forest roads are important in providing access for hunters and other non-motorized recreators and fire breaks for forest fire suppression efforts (Watkins et al, 2001).

Rush Lake:

- Maintain the existing walk-in access for boating as well as 2 small parking areas.
- Some minor improvements may be made to a small area along the water's edge to protect the shoreline from erosion and for fire prevention.
- This area is currently being used as an undesignated picnic area and improvements such as a campfire ring and a picnic table may be developed to protect the site from further disturbance.

Kurt's Deep Depression: No recreational development is proposed.

Devil's Hole Pines:

Consider as a potential future site of a cross-country ski trail, which would be done in a way to protect the natural qualities of this site.

Option 13B – Native Community Management Area

Option 13B- Management Objectives:

The long-term objectives are as follows: Restore the pre-settlement forest communities of dry pine forest and mixed hardwoods and manage them to obtain an old growth appearance. Preserve the Rush Lake's water quality. Promote a late successional stage forest in the Devil's Hole Pines area, dominated by older red pine. Maintain the existing natural stand of red pine and enhance the site by promoting the regeneration of native pine.

The short-term objective is to establish the desired native community tree species. Once the native community tree species have become common on the landscape, the long-term objective would be to restore other biota associated with the native forest communities.

Option 13B Management Prescriptions:
As appropriate for the specific site, existing ecological communities, wildlife species and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short-term objectives identified above. Under Option B this area would be designated as a Native Community Management Area. The management of this area would be as described as follows:

- Extend rotation ages to encourage an older age class forest.
- Thin existing pine plantations to a point that understory development occurs and encourages the development of the understory plants.
- Use natural regeneration techniques to encourage a native mix of jack pine, red pine, white pine, and various hardwoods on the landscape.
- Use prescribed burns where possible to provide a small barrens component on this landscape. Fires and windstorms were the natural disturbance actions on this management unit. The fires were likely less frequent but may have been locally more intense than on the barrens area to the south.
- Lay out timber sales on the landscape to simulate natural burn patterns using topography and natural breaks. Stands would be left to grow to full biological maturity, extending rotations beyond option 13A by 25-50% longer.
- Management of Rush Lake, Kurt's Deep Depression, and Devil's Hole Pines would be as indicated for Option 13A.

Option 13B- Recreation Management:
Recreational Management for Option 13B would be the same as indicated under Option 13A.

Comparison and Evaluation of Management Options 13A and 13B:
This area represents a landscape which had regular disturbance to a natural community dominated by pines and early successional forests. Many of these community attributes can be well maintained through techniques that also generate forest products. It currently is dominated by a managed forest of pines and early successional species that facilitate the management goals and strategies of Option 13A. This area represents one of the best locations on the BRSF to demonstrate the multiple use capabilities of a state forest where the management for a regular production of forest products, for a variety of ecological attributes and for new recreational opportunities can occur in the same location. The preferred option for this management area is Option 13A.

Option 13B would reduce timber production levels from Option 13A. Certain ecological benefits of an older forest would be enhanced. Management seen on the landscape would decrease in the short term, but the management that would be done would likely be more noticeable with larger cut areas and prescribed burning. There is also a higher risk of wildfire with more mortality seen in older stands.

Both options propose the development of a nordic ski trail system, a 100 car parking lot, a rustic warming shelter with flush toilets, and a separate and concealed maintenance facility.

Lake Superior's "snow belt" influences snowfall on the Brule River State Forest so it has more dependable conditions than most other properties on the state. Because of this skiers travel from quite a distance and ski several other trails in the area, making this a "destination" attraction. It is common for skiers to come from Madison, Milwaukee, or

Minneapolis to ski here. There is a certain charm to the existing trails, as well as limited land availability, which suggests any substantial development of additional trails be made elsewhere. The area proposed here for trail development has a suitable land area for an extensive system as well as having the most interesting topography on the property for skiing. This system would have the potential to attract additional skiers to the region to ski here and at other nearby trails in Cable and Ironwood, MI.

Area 14- Willard Road - Native Community Management Area

The Willard Road / Blueberry Creek management area occurs along a transition between the Bayfield Sand Plain and Mille Lacs Upland ecological landscapes. This area, including both private and state owned lands within the current project boundary, is approximately 3,400 acres in size. It occurs primarily on the western edge of the Brule River State Forest in the area north and west of the Brule River between Highway B and Highway S.

The Mille Lacs Upland has a richer and moister soil than most uplands within the BRSF and studies suggest that it has the potential to support a northern hardwood forest (Eckstein 2001). This management area represents a gradual transition into the drier soils of the disturbance dominated forests on the Bayfield Sand Plain. Historically this area likely experienced periodic windthrows and fires but at a lower frequency than the area east of the Brule River in areas 13 and 17. Very large forest fires altered this area's forest cover in the 1920s, causing large areas dominated by aspen. Much of the oak got its start following these fires but white pine did not fair well. The BRSF Community Restoration and Old Growth Assessment rated the northern hardwood restoration opportunity as low on the BRSF (Eckstein et al. 2001). The Regional Ecology Assessment notes that other public lands have greater opportunity to support the northern hardwood community type in this area (Bartelt et al. 1999). This area contains varied topography, with small kettle swamps filled with black spruce surrounded by upland oak and aspen. There are two Biotic Inventory sites that contain remnants of native red pine stands.

Option 14A – Native Community Management Area- Preferred

Option 14A- Management Objectives:

The long-term objectives for Option 14A are as follows: Restore and perpetuate the native mixed hardwood forest ecosystem, including aspen, white birch, yellow birch, red maple, sugar maple, and red oak. Promote a diverse mixture of size and age classes while slowly increasing the percentage of pine cover type in the area. The expected result would be to produce a forest with increased young pine and mixed hardwoods. There would be less aspen. The pine component would also be favored to develop the supercanopy that was once present in this ecoregion.

The short-term objective is to re-establish a diversity of native community tree species first and then begin to restore other appropriate biota.

Option 14A- Management Prescriptions:

As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short term objectives identified above:

- Regenerate the mixture of hardwoods and pine that are native to this ecoregion by clearcutting small, irregularly shaped areas less than 15 acres in size and leaving seed source trees along the edges of the cut areas.
- Hand-plant pine within and along the edges of the small cut areas and protect young trees from animal browsing.
- Use management actions such as selection, shelterwood and seed tree harvests in conjunction with scarification to promote pine, oak, and birch regeneration.
- Use scarification around existing large pine to promote establishment of pine seedlings into the ecosystem.
- Perform site scarification for white birch. This species is declining in numbers across this ecoregion and requires an adequate seedbed for its regeneration. Small-scale attempts (less than 15 acres in size) would specifically be made to regenerate this species using intensive site scarification in conjunction with shelterwood and seed tree cuts. Direct seeding efforts may be tried following the scarification to bolster natural seeding.
- Passively manage the two sites identified in the "Biotic Inventory" to serve as references for future management elsewhere.
- The portion of the forest visible from the Brule River, its tributaries, the bog, lakes, and designated public use areas would have no active management (timber harvest/ground disturbance). Timber salvage operations would not happen within sight of the river. The only cutting that would occur along the river would be done to provide a safe experience to users of the forest and river. This cutting would generally not remove the timber products from the areas.

Option 14A- Recreation Management:

- Most of the primitive roads in this management unit are hunter-walking trails such as those along Anderson Road and Hilltop Road. Other roads that are currently open to vehicle traffic would remain open for this use unless resource degradation is occurring as a result of the vehicular traffic.
- Close newly constructed primitive roads that are built for management purposes immediately following the management activity unless there is good potential for firewood gathering. If left open for firewood gathering, the roads would be open for 2 years following the management activity, and then bermed or gated to block vehicles.
- Retain forest roads that are open for traffic, as they serve as firebreaks and provide access for fire suppression equipment.

Option 14B- Scenic Resources Management Area:

Option 14A- Management Objectives:

The short-term and long-term management objectives are as follows:
Preserve and enhance the natural scenic quality in this area, particularly in any areas seen from the Brule River. The vegetation would be characterized by a mature forest of, especially large diameter (more than 12-inch diameter at chest height) northern hardwoods, oaks and long-lived conifer species such as, red pine, white pine, and white spruce. In the long term, this forest would see a reduction in diversity and increased dominance by red maple with a decrease in pine and oak species. Passively manage the small kettle swamps filled with black spruce surrounded by upland oak and aspen and the remnant native stands of red pine.

Option 14B- Management Prescriptions:

As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short term objectives identified above:

- Limit timber management to the clean up of blowdowns using salvage timber sales when they occur on acreage in excess of 20-acre blocks. This would be done as a fuel reduction strategy to reduce threat of large-scale forest fires.
- Once salvage logging is complete, plant and/or direct seed to encourage growth of desired species.

Option 14B- Recreation Management:
Recreation Management for Option 14B would be the same as indicated for Option 14A.

Comparison and Evaluation of Management Options 14A and 14B:
Option 14A is the preferred option. This area represents a unique transition between major ecoregions and a diverse landscape. It has the potential to support the historic diverse mixed forest of hardwoods and pine species. Option 14A presents the best known techniques to manage for and support the mixed forest of moderate disturbance that was likely present here historically. This approach would also offer a different forest composition than found in most other areas of the BRSF. In order to manage for and regenerate the diversity of communities that this area could support, a variety of active and passive methods would be used. The diversity within this area would support a variety of game and non-game wildlife species while providing some forest products. People would see a low to moderate level of overall management activity throughout the area. Occasionally small patches would experience intensive management actions to regenerate specific species. Aesthetic management procedures would minimize any impacts to views along roads.

Option 14B places priority on aesthetic versus ecological goals. It would allow existing trees, dominated by aspen, oak and red pine, to grow old and die naturally. This management would avoid almost all forms of active forest management except in response to blowdowns. People would see little if any management activity. The forest would have more older trees and increased down woody debris. Without management actions or major natural disturbance, the forest would slowly shift toward a dominance of shade tolerant species such as red maple. Species such as white birch, red pine, oak and aspen would all see little regeneration and slowly decrease in presence. This forest would favor closed canopy interior forest species such as interior warblers and four toed salamanders.

Area 15- Hazel Prairie Pines – Management Area- Options

The Hazel Prairie Pines management area occurs within the larger Bayfield Sand Plain ecological landscape. This area, including both private and state owned lands within the current project boundary, is approximately 5,800 acres in size. The Hazel Prairie Pines area is a flat, outwash sand plain with very sandy soils. Much of this land area was once farmed, and is now vegetated with primarily pine plantations. Currently there is an area of over 2000 acres of contiguous red pine plantations within this unit. The area is within the Bayfield Sand Barrens ecological area which naturally supports a variety of disturbance dominated natural communities and has good site potential for growth of pine species (Eckstein et al. 2001). Very few town roads are located within this management unit, with Hazel Prairie road being the most heavily traveled. County Hwy P borders this area on the west. Ownership within this area is primarily state owned, with only a few private parcels located within the management area.

This area of the forest was heavily damaged by a hailstorm in August 2000, resulting in the death of thousands of acres of trees, primarily jack pine, red pine and aspen. This has created a number of forest management challenges including fire control, disease concerns and future regeneration plans. It is likely that much of this area will be clearcut of dead and diseased trees and require artificial regeneration. This provides an opportunity to demonstrate different methods of management and may use prescribed burning as a management tool to restore a more natural looking forest.

Option 15A- Native Community Management Area

Option 15A Management Objectives:
The long-term objectives for Option 15A area as follows: Restore the pre-settlement forest communities of dry pine forest and mixed hardwoods and manage some areas to an old growth appearance. Promote a diverse mixture of size and age classes while maintaining the percentage of pine cover type in the area. Encourage a variety of other species representative of the historic vegetation including a more dominant component of white pine. Maintain areas of jack pine forest stands. Maintain some aspen/birch and oak areas as game and non-game wildlife habitat. The expected result would be to produce a forest with primarily dry pine forests and mixed hardwoods.

The short-term objective is to re-establish the native community tree species first and then begin to restore other appropriate biota. The expected result would be to produce a forest with young pine and mixed hardwoods.

Option 15A Management Prescriptions:
As appropriate for the specific site, existing ecological communities, wildlife species and timber stand conditions, the following management prescriptions would be used to achieve the long-term and short-term objectives identified above.

Gradually thin existing pine plantations that were not damaged by the hail storm to a point that the development of understory plants occurs.

- Design timber sales to simulate natural burn patterns using topography and natural breaks. Stands would be left to grow to near biological maturity.

Use natural and artificial regeneration techniques to encourage a native mix of jack pine, red pine, white pine, and various hardwoods on the landscape. Following the significant tree mortality caused by the August 2000 hail storm, a variety of adaptive techniques will be used to mostly quickly reproduce a forested landscape.

- Use prescribed burns where possible to provide a small barrens component on this landscape. Fires and windstorms were the natural disturbance actions on this management unit. The fires were likely less frequent but may have been locally more intense than on the barrens area to the south.

Option 15A Recreation Management:

- The current network of forest roads would be utilized during management activities, and individual roads would be closed following timber sales based upon the potential for resource degradation. Any new forest roads and drivable skid trails built during forest management activities would be closed following the completion of the timber sale activities. Timber sales that have potential for firewood harvesting would have new roads and skid trails left open for the 2 years following sale closeout. Fire suppression

equipment and personnel would utilize these lightly traveled roads for access and as fire breaks if necessary. Closed roads would remain open to hunters and other non-motorized recreators for walking only.

Option 15B- Forest Production Area- Preferred

Option 15B Management Objectives:
The long-term objective of this area would be to provide a steady supply of renewable forest products and diverse wildlife habitat. Maintain characteristics of a naturally appearing dry pine forest dominated by jack and red pine with white pine, oak and other early successional hardwoods. Regenerate existing stands in the most efficient manner possible while spreading out age and size classes to provide a steady supply of forest products.

Maintenance of the pine, oak and aspen forests in this management unit is accomplished effectively through sustainable forest management including timber harvest. The Community Restoration and Old Growth Assessment identifies maintenance of the jack pine forest through active management as an important opportunity on the BRSF (Eckstein et al. 2001). Maintenance of aspen/birch and oak areas is important to wildlife species and hunting recreation on the BRSF (Watkins et al. 2001). In this region of Wisconsin the generation of forest products and forest based recreation have been shown to be compatible and often complimentary (Marcouiller and Mace 1999, WDNR 1999). Areas of hardwoods, primarily aspen, would be maintained to provide fuel breaks for fire management purposes. Introduce white pine as a more dominant component where possible, as well as a variety of other species representative of the historic forest.

Short-term objectives would be to re-establish a diverse forest with components of the historic forest, primarily dry pines but also accommodating a variety of other species.

Option 15B Management Prescriptions:
As appropriate for the specific site, existing ecological communities, wildlife species and timber stand conditions, the following management prescriptions would be used to achieve the long-term and short-term objectives identified above.

- Manage existing red pine plantations using timber management guidelines found in the DNR Silvicultural Handbook.
- Following harvest, prepare sites for tree planting using mechanical planting site preparation methods such as furrowing, disk trenching, or spot scarification.
- Use natural and artificial regeneration techniques to encourage a native mix of jack pine, red pine, white pine, and various hardwoods on the landscape. Following the significant tree mortality caused by the August 2000 hailstorm, a variety of adaptive techniques will be used to mostly quickly reproduce a forested landscape.
- Plant red pine with a mixture of white pine and jack pine in some locations.
- Plant existing openings that are not within frost pockets with red pine, provided they are not suitable for future log landings.
- Maintain jack pine on sites that it currently occupies as well as in frost pockets. It would be managed on a 50-year rotation with natural regeneration techniques being used as the first choice for regeneration.
- Manage aspen on a 50-year rotation, at which time the stand would require a regeneration harvest. Diversity would be encouraged in the aspen covertype by not requiring all competing species to be cut within all regeneration cuts. 1-5 inch caliper

hardwoods, such as red maple and oak, would not be required to be cut along with the aspen.
- Very poor aspen sites would be looked at as possible log landing sites and would be maintained as open grassland/ wildlife openings.
- Evenly distribute logging slash across the site following the harvest.
- Any portion of the forest visible from the Brule River would have no active management (timber harvest/ground disturbance). Timber salvage operations would not happen within sight of the river. The only cutting that would occur along the river would be done to provide a safe experience to users of the forest and river. This cutting would generally not remove the timber products from the areas.

Option 15B Recreation Management:
Recreation Management for Option 15B would be the same as indicated under Option 15A.

Comparison and Evaluation of Management Options 15A and 15B:
As a result of the vast areas of tree mortality resulting from the hail storm of August 2000, significant levels of active management (site preparation, planting etc.) will be seen under both options for the next 10 years. Management in the undamaged part of the unit would be less in Option 15A in the short term. After this initial period, active management under option 15A would be less than that in Option 15B.

This area represents a landscape which had regular disturbance to a natural community dominated by pines and early successional forests but transitioned into a community with less disturbance. Many of the dry pine forest community attributes can be well maintained through techniques that also generate forest products. It is currently dominated by a managed forest of pines and large areas of dead pine and aspen, which facilitate the management goals, and strategies of Option 15B. This area represents a unique opportunity to demonstrate a variety of forest restoration techniques on the BRSF and how these can produce a forest to support the multiple use capabilities of a state forest such as regular production of forest products, a variety of ecological attributes and various recreational opportunities. The preferred option for this management area is Option 15B.

Option 15A would eventually produce a forest with older trees and a greater percentage of shade tolerant hardwoods. Generation of forest products would be lower in this option. Certain ecological benefits of an older forest would be enhanced. In the long term there would be less active management on the landscape. There would be a higher risk of wildfire with more mortality seen in older stands, particularly jack and red pine.

Area 16- Brule River Terrace – Native Community Management Area

The Brule River Terrace management area occurs within the larger Bayfield Sand Plain ecological landscape. This area, including both private and state owned lands, is approximately 400 acres in size. The terrace area is located on the northwest side of the Brule River, on the flat area immediately above, but not including, the slopes leading out of the Brule Bog. It is located within the Bayfield Sand Plain ecoregion. The terrace area is currently dominated by jack pine and red pine plantations. No significant rare species were noted on these terraces, however, the potential for these areas to produce an older forest of red and white pine was recognized (Epstein 1999, Eckstein 2001).

The terrace is easily seen on a topography map and was historically used as farmland by early settlers. Old foundations of farm buildings can still be seen within this area. Once the early attempts at farming failed, these areas were bought by the state and pine was planted on the old fields. Today, jack pine and red pine plantations dominate the Brule River Terrace area.

The Stone Chimney portion of the terrace was hit by a severe hailstorm of August 2000 and a large acreage (250+ acres) of jack pine and aspen were killed or damaged. In response to this damage, this area has been clearcut and will be reforested over the next several years. This hail-damaged area provides an opportunity to restore original vegetation to the management unit. Following the harvest of hail damaged trees, this area will be treated by anchor chaining or other methods to create conditions for natural regeneration of the species that were present, primarily jack pine and balsam fir. Beginning in the spring of 2002, white pine, red pine, and other appropriate species will be planted throughout this area to restore these species to the landscape.

Area 16- Management Objectives:
The long-term management objective for this area is to maintain a diverse, older, pine dominated forest and associated understory vegetation. These terraces are within the Bayfield Sands and therefore would naturally support a pine forest with a regular disturbance. Encourage a red and white pine dominated forest on the terrace. Within 50-100 years, results should be seen with a definite increase in naturally grown long-lived pines within this area.

The short-term objective is to reforest the area creating a more natural appearing stand, begin to establish a diverse community of native species and encourage the natural regeneration of pines.

Area 16- Management Prescriptions:
As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short-term objectives identified above:

- The Stone Chimney portion of the terrace hit by the severe hailstorm of August 2000 (250+ acres) of jack pine and aspen has been recently clearcut. Following this initial harvest, chaining, and replanting, it would be monitored for a minimum of 25 years. At that time, decisions would be made if a thinning would be beneficial in moving the forest cover toward the management objective.
- Selectively thin existing pine plantations in stages to create a more natural “old growth” appearance and encourage a more diverse understory.
- Use natural regeneration methods where possible and practical. Where pine is lacking, planting and/or direct seeding would occur to re-establish it. Planting and seeding would be accompanied by mechanical and/or limited chemical site preparation to improve survival.
- Plant in aesthetic zones in a natural pattern, to avoid the row appearance of a plantation.
- Do not harvest timber on steep slopes.
- Actively manage natural stands (pine or otherwise) occurring on the terrace to provide conditions favorable for the growth of pine.

Area 16- Recreation Management:

- Primitive roads through this area that are currently open would remain so. Any new forest roads would be used temporarily for management purposes and closed immediately following the management activity.
- Close any existing primitive roads that are causing adverse environmental impacts.

Area 17- Pine Barrens - Native Community Management Area

This site occurs within the larger Bayfield Sand Plain ecological landscape. This area, including both private and state owned lands within the current project boundary, is approximately 6,800 acres in size. It extends from the southern edge of the Brule Bog management area south to the current forest boundary.

The vegetation in this area is a mixture of red and jack pine plantations, scrub oak, and aspen forest types. Other existing native communities include open grassy-brush prairie (a.k.a. barrens), pine savannas, dense regenerating pine forest, and mature pine forests. Prior to the extensive salvage of jack pine in the early to mid 1990s due to an outbreak of jack pine budworm, the forest cover was dominated by jack pine with red pine being the second most dominant forest type. Other less common forest types found here were white pine, oak, aspen, and mixed hardwoods.

Within the current state forest project boundaries the "Biotic Inventory of the Brule River State Forest" identifies a site referred to as the "North Country Trail Barrens" (Epstein et al. 1999). Approximately half of this 2800 acre site is in private ownership. It is recommended that consideration be given to maintaining the existing natural community remnants and expanding them where feasible. The "Community Restoration and Old Growth Assessment" recognized the unique but small opportunity to restore 400-600 acres of barrens on the existing state forest land in the Motts Ravine area and also recommends the maintenance of the existing jack pine component (Eckstein et al. 2001). Within the region there are other public lands with greater acreage and potential for barrens restoration than the BRSF (Bartelt et al. 1999).

An existing snowmobile and winter ATV trail passes through this management area parallel to and south of the Brule River. Also, the southern portion of the Historic Portage Trail runs parallel to and south of the East Fork of the Brule River in this area.

Area 17- Management Objectives:

The long-term management objective for this area is to restore a mosaic of native vegetative communities that provide habitat for the full range of plants and animals that are known to inhabit the northwest sand region of Wisconsin. Maintain barrens and dry forest types. Reduce fire danger by lowering fuel loads. Native communities found here ranged from open grassy-brush prairie (a.k.a. barrens) to pine savannas, dense regenerating pine forest, and mature pine forests. The forest cover was dominated by jack pine with red pine being the second most dominant forest type. Other less common forest types found here were white pine, oak, aspen, and mixed hardwoods.

Vegetation would be characterized by an open forest to shrub dominated landscape with regular disturbance and only small areas of older trees (Bartelt et al. 1999). This mosaic of vegetative types was highly influenced by recurring natural disturbance caused by insects, windstorms, and fire. Mimic natural disturbance patterns in rates and size, as best as knowledge and implementation constraints allow. The dominant community would be pine

savannas with lesser amounts of dry pine forests. Maintain the lesser components of open barrens, oak forests, oak savannas, aspen forest, and mixed hardwoods. Maintain jack pine as the dominant tree species with red pine being secondary. Maintain white pine, oak, aspen, and hardwoods in significantly smaller amounts.

The proposed southern boundary expansion would add approximately 27,000 acres to this area and would greatly increase the conservation value of barrens/dry forest management in this region. The expansion of the current boundaries would depend upon the approval of the Natural Resources Board, willing sellers and the availability of funds.

The short-term objective is to begin this process of ecosystem restoration through management of red pine plantations that now dominate this landscape. Existing red pine plantations would be gradually phased out and replaced with the barrens habitat through an accelerated thinning schedule. Initial restoration efforts would continue to focus on a representative open barrens area along Motts Ravine Road and thinning of red pine plantations to create a more natural spacing and distribution of trees that would allow development of a shrub and herbaceous forest layer.

Area 17- Management Prescriptions:
As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short-term objectives identified above:

- Use a combination of timber harvest, prescribed fire, mechanical scarification/site preparation, and seeding or planting to mimic natural disturbances.
- Restore open barrens areas, such as Motts Ravine, through clearcutting and prescribed burns to recreate a representative natural vegetative community, that includes jack pine.
- Establish areas totaling approximately 600 acres where permanent barrens and savannas would be maintained.
- The pine forest would be managed to maintain a natural mix of primarily jack pine, with red pine and white pine as lesser components. Management would consist of regeneration harvests at or before biological rotation age (45-70 years old) followed by treatments (anchor chaining or prescribed fire) to stimulate natural regeneration. In some cases direct seeding or planting may occur to bolster regeneration numbers and/or alter species composition. Fully stocked stands of pine would be the goal within these areas.
- Use a combination of timber harvest and prescribed burns to mimic natural factors that created and maintained savannas. Savannas are the least represented community on the sand soils region of NW Wisconsin that was once a common community here.
- Final harvest of a timber stand would range from 50 to 100% of the mature trees on an area ranging in size up to several hundred acres.
- Timber harvest over a several year period may be established adjacent to each other to increase the resulting size of the open area to re-create a large-scale disturbance such as a windstorm or insect infestation and the resulting fire that often followed. Wildfires commonly burned a patch up to several thousand acres. This would create roving blocks of open habitat that would provide temporary barrens habitats and connectivity between the permanent barrens found on the BRSF, Bayfield County Forest, and Douglas County Wildlife Area.
- Prolong regeneration attempts 3-5 years to mimic the natural period of open grassland/savanna habitat following fire. Less than optimal (full stocking rates) would be accepted in some areas in order to provide savanna conditions.

- Use natural regeneration where possible. Consider planting of trees and other native vegetation when needed to restore the full community. Planting would use the least ground disturbance needed to accomplish a successful planting but may include techniques such as furrowing, anchor chain scarification, bracke scarification, pre-sale scarification with bulldozers, and even fully plowing and disking specific sites.
- Use herbicide only as needed to control invasive exotic species or to create a specific effect on the vegetative structure and composition needed to fulfill a complete community restoration objective.

Area 17- Recreation Management:

- Maintain the existing snowmobile and winter ATV trail that passes through the area, open from December 1 to March 30 annually. It would be closed to motorized traffic the rest of the year. This trail is a "connector" snowmobile and ATV trail that crosses the Brule River State Forest, linking a regional trail network.(Watkins et al, 2001) Attempts would be made to re-route the trail to improve the safety of the trail and re-route it from a steep area on private land. A short loop trail will be constructed with an interpretive sign to provide a scenic overlook of the bog for snowmobilers.
- Maintain the current level (approximate lineal mile) of forest roads open to vehicular traffic. These roads provide a valuable function as fire breaks. If a roads needed to be closed in order to prevent resource degradation, a new road of approximate equal length would be opened in a different location within a reasonable time period. New logging roads would be closed following logging activity unless firewood opportunities exist. Roads open for firewood collection would be closed 2 years following the logging operation by berming or gating.
- Maintain the existing North Country National Scenic Trail that passes through this area as a lightly developed trail. The Recreational Supply and Demand Assessment notes the role of the Brule River State Forest in providing this link in an important regional trail (Watkins et al, 2001), following the recommendation of the Environmental Education and Awareness Assessment (Fannucchi et al, 1998).
- Maintain the existing Historic Portage Trail as lightly developed trail.

Area 18- St. Croix Picnic - Recreation Management Area

The St. Croix Picnic Area is located on the north end of St. Croix Lake and is accessed from highway P. This area is approximately 10 acres in size. It is at the south end of the contiguous property. It has a flowing artesian well, a contemporary pit toilet, a single lane boat landing, parking space for about 10 vehicles and 3 vehicle/trailer combinations. A small informational kiosk is located adjacent to the boat landing and a short distance north on highway P is located a historic marker explaining the role of the Historic Portage Trail. There is a small gravel pull-off at the historic marker.

Area 18- Management Objectives:

The short-term and long-term management objectives are to maintain a small picnic area and boat landing and provide access to the North Country National Scenic Trail and the Historic Portage Trail.

Input received concerning the existing recreational facilities such as the St. Croix Picnic Area generally agreed that the character and size of the facility should maintained.

Area 18- Recreational Use Setting Subclassification:
The St. Croix Picnic- Recreation Management Area would be managed as a Type 3 recreational use setting, picnic area and boat landing. The objective for a Type 3 setting is "to provide readily accessible areas with modest recreational facilities offering opportunities at different times and places for a variety of dispersed recreational uses and experiences" (NR 44.07).

Area 18- Management Prescriptions:
As appropriate for the specific site, existing ecological communities and timber stand conditions, the following management prescriptions will be used to achieve the long-term and short-term objectives identified above:

- Shoreline management would be done to demonstrate best management practices to other waterfront owners.
- Vegetation would be managed to screen the picnic area from full view as well as to develop large trees to provide shade to the area.

Area 18- Recreation Management:

- Continue to maintain the picnic area and boat landing as currently operated.
- A suitable pier would be installed to facilitate boat landing and provide angling opportunities.
- The historic marker would be relocated to the picnic area to offer a better opportunity to pause and read the marker text as well as make a connection between the state forest and the protection of this important trail.
- A rustic, CCC era character would be developed in the picnic area through the use of round wood construction of picnic tables and benches, round wooden signposts, and rustic routed wooden signs in a historic font.
- The artesian well, a focal point of the area, would be fitted with an attractive wellhead and shelter that would reflect CCC era construction of similar sites.

Area 19- Gordon Annex - Forest Production

The Gordon Annex Forest Production Area is located about 10 miles south of the main portion of the state forest. This 1000-acre area was once used as a state forest tree nursery, closing nursery operations in the mid 1960s. Now located on the property is a minimum-security prison, which is operated there by agreements between the Department of Corrections and the DNR.

This land area is located within the Bayfield Sand Plain and has very sandy soil conditions. The Eau Claire River flows through the Gordon Annex and one county highway, Highway G, runs from east to west through it. One town road, Newsome Rd., runs through a small section of the property and another, Lawler Bridge Rd., borders the eastern section of the forest. A small, unnamed lake is located partially within the property in the northeast corner of state ownership. Surrounding ownership is primarily industrial forestland, with only a few bordering private non-industrial owners.

Vegetation types on this management unit primarily consist of pine plantations. Much of this area was planted with leftover trees from nursery operations. There are small areas of aspen and one undisturbed kettle bog is located in the center of the property. A rare plant

was found in the bog and a rare invertebrate was found in the Eau Claire River (Epstein et al. 1999)

Area 19- Management Objectives:
The short-term and long-term objective is to provide a steady supply of renewable forest products with emphasis on growing red pine.

The majority of the management actions within this management unit would be covered within the red pine covertype description. Within the viewshed of the Eau Claire River and the town and county roads within this unit, aesthetic management guidelines would be utilized. This would include utilizing natural regeneration methods whenever practical, treating the viewshed areas as separate stands and regenerating them at different times than the main stand, and applying the principals of big tree silviculture whenever practical. White pine would be encouraged along these areas to provide a more diverse mixture of tree species.

The input received on the Alternatives generally agreed that the Gordon Annex should be managed for forest production; therefore only one option was developed for this area.

Area 19- Management Prescriptions:
As appropriate for the specific site, existing ecological communities, wildlife species and timber stand conditions, the following management prescriptions would be used to achieve the long-term and short-term objectives identified above.

- Maintain existing forest openings and woods roads throughout this area to provide firebreaks in case of a wildfire.
- This area would also remain available for fire training operations. Historically, this area has been used as a location for fire equipment training and certification.
- Manage existing red pine plantations using timber management guidelines found in the DNR Silvicultural Handbook. Practices used would vary by stand condition. Young stands would be released from competing vegetation using a variety of methods, including both mechanical and chemical means.
- Thin red pine stands based upon established thinning guides. First thinnings would be done once stands become operable and would generally remove entire rows of trees. Subsequent thinnings become much more selective, with the smallest and weakest trees being removed.
- Regenerate red pine at recommended rotation ages (generally between 90-120 years of age) based upon site quality.
- Regenerate red pine stands following final harvest by planting unless existing stocking conditions following final harvest dictate otherwise.
- Plant red pine with a small amount of white pine mixed into the first 20 rows adjacent to town roads. Prior to planting, the site would be prepared through a mechanical scarification treatment.
- Maintain jack pine within frost pockets and as a small component of future stands as natural regeneration.
- Maintain the jack pine that presently borders the river.
- Manage jack pine on a 50-year rotation with natural regeneration techniques being used as the first choice for regeneration.
- The primary technique used to regenerate jack pine would be to harvest all jack pine and other species within a stand followed by anchor chaining to expose mineral soil

and distribute existing seeds across the treated area. If jack pine regeneration is poor, replanting would be done. In some cases this would mean the entire area would be replanted, in others it would mean that spot planting would be done to bolster stocking rates.

- Evenly distribute logging slash across the site following the harvest.
- Maintain current levels of aspen in its present locations for timber production purposes as well as to provide habitat for a variety of wildlife.
- Manage aspen on a 50-year rotation, at which time the stand would require a regeneration harvest. Diversity would be encouraged in the aspen covertype by not requiring all competing species to be cut within all regeneration cuts. We would not require all 1-5 inch hardwoods such as red maple and oak to be cut along with the aspen unless it is likely to threaten the reestablishment of aspen on the site.
- Maintain other species such as scrub oak, birch, and red maple as components of jack pine and aspen stands.
- Manage the riparian areas of the Eau Claire River to encourage species such as scrub oak, red maple, and aspen mixtures.
- Eliminate scotch pine from the landscape primarily through hand cutting.

Area 19- Recreation Management:

- Due to the location of the prison, the majority of this area is off limits to public use. The only developed recreation area on the property is a rustic boat landing on the Eau Claire River located off of Highway G. Other recreational activities involve hunting outside of the posted area surrounding the prison.
- The current network of forest roads would be utilized during management activities, and individual roads would be closed following timber sales based upon the potential for resource degradation. Any new forest roads and drivable skid trails built during forest management activities would be closed following the completion of the timber sale activities.

Area 20- Gordon Correctional Facility- Special Management

Within the Gordon Annex Forest Production Area is a parcel of land, which is leased to the State of Wisconsin Department of Corrections for use as a minimum-security correctional facility. The Gordon Annex is located about 10 miles south of the main portion of the state forest. The leased portion consists of an approximately 45 acre area.

The Mille Lacs Uplands - Ecological Landscape

Subsection 212Kb (National Hierarchical Framework of Ecological Units)

The Mille Lacs Uplands occurs on the western fringe of the Brule River State Forest. Included within this ecological landscape is the area known as Lake Minnesuing. This landscape is characterized by rolling topography and sandy soils. Historically, this area was dominated by white pine and yellow birch with a mix of aspen, white birch, sugar maple, white spruce, and balsam fir as common associates before European settlement (Eckstein et al. 2001). Today, this area has a second growth forest of aspen, sugar maple, basswood, and red oak. A number of significant wetlands that support rare species occur within this area (Bartelt et al. 1999, Epstein et al. 1999).

Area 21- Lake Minnesuing/Highway P - Scenic Management Area

This management unit is located on the western end of the BRSF and extends along the western shore of Lake Minnesuing down to the area where the west fork of the Brule River crosses Highway P. This management unit includes the entire block of state ownership west of Lake Minnesuing and narrows down to a 500-foot wide aesthetic strip as it follows Highway P south to the west fork area. This area, including both private and state owned lands, is approximately 900 acres in size.

This management area includes portions of two ecological land types. The northern area around the lake is within the Mille Lacs Uplands and the southern stretch along Highway P is part of the Bayfield Sand Plain. The watersheds for this area go in 2 separate directions, but end up in the same place. The northern end of this area drains into Lake Minnesuing through overland flow and groundwater, while the southern area drains into Wilson Creek (a special watershed management area). Both of these water bodies eventually end up draining into the Brule River, Wilson creek directly into the west fork and Lake Minnesuing eventually through Nebagamon creek. The great majority of this land area is under state ownership at the present time.

Several town roads are within this area as well as Highway P and Highway L. The state forest maintains a primitive boat launch at the end of Park Road. This area is lightly used as a boat launch, but is heavily used at times during winter months to access the lake for ice fishing. The southern tip of this management area also contains one of the ten currently designated watercraft-launching sites on the Brule River, where the West Fork of the Brule crosses Highway P. This landing is very lightly used by canoeists.

Area 21- Management Objectives:

The short-term and long-term objective is to preserve and enhance the existing scenic beauty of this area by managing it as a block of older forest consisting of long-lived species. Long lived tree species such as hemlock, red pine, and white pine would be encouraged to provide scenic beauty within this management unit.

Area 21- Recreational Use Setting Subclassification:

The Lake Minnesuing / Highway P - Scenic Management Area would be managed as a Type 3 recreational use setting. The objective for a Type 3 setting is “to provide readily

accessible areas with modest recreational facilities offering opportunities at different times and places for a variety of dispersed recreational uses and experiences" (NR 44.07).

Area 21- Management Prescriptions:
As appropriate for the specific site, existing ecological communities, and scenic resources, the following management prescriptions will be used to achieve the long-term and short term objectives identified above. Management would be the same as under Option 21A, except as follows:

- No timber harvesting would be authorized in the Lake Minnesuing / Highway P - Scenic Management Area, except in the case of a catastrophic event such as a windstorm, a fire, or flood. Timber salvage operations would only be done to clean up the areas affected by the event and restore scenic beauty.
- Plant white pine and red pine along Highway P in a natural pattern to provide long-lived tree species and enhance the scenic quality.
- Plant white pine and red pine in natural forest openings.

Area 21- Recreation Management:

- Maintain the existing boat landing at Lake Minnesuing as a Type 3 recreational use setting with a small mowed area.
- The existing forest roads in the Lake Minnesuing area would be closed to motorized travel. These trails would be designated as a type 3 recreational use setting with restrictions, and be maintained as lightly developed trails through periodic mowing. A primitive nature trail would be maintained leading to a picnic area next to the lake. These developments would accommodate hikers and picnickers while preserving the rustic character of the area.
- This area has potential to become part of the forest's hunter walking trail system.

Appendix A- Glossary of Terms:

Aesthetics- 3. A pleasing appearance or effect. Source: Webster's 10th New Collegiate Dictionary. 1993.

Biological Diversity- Biological diversity or biodiversity means all life forms, the places they live, and the processes that support them. Biologically diverse ecosystems have many complex linkages among a wide variety of plants and animals and their physical and chemical environments.

Formal Definition: "The variety and abundance of species, their genetic composition, and the communities, ecosystems and landscapes in which they occur. Biological diversity also refers to the variety of ecological structures, functions and processes at any of these levels." Source: Wisconsin Statute 28.04(a) - Public Forests.

Clearcutting- A regeneration or harvest method in which the majority of trees are cleared from an area at one time, often followed by seeding or tree planting to create a new, even-aged stand.

Cultural Resource- These are human resources - archeological, architectural, or historical artifacts, sites or structures. Native American burial sites would be one example of a cultural resource.

Formal Definition: "Any archeological, architectural or historical artifact, site or structure that reflects on the human-made environment." Source: Wisconsin Administrative Code, Department of Natural Resources, Chapter NR 44.03

Diversity- or biodiversity means all life forms, the places they live, and the processes that support them. Biologically diverse ecosystems have many complex linkages among a wide variety of plants and animals and their physical and chemical environments.

Formal Definition: "The variety and abundance of species, their genetic composition, and the communities, ecosystems and landscapes in which they occur. Biological diversity also refers to the variety of ecological structures, functions and processes at any of these levels." Source: Wisconsin Statute 28.04(a) - Public Forests.

Ecological Capability- The ability of an area to support certain types of plants and animals. This is dependent on the type of soil, climate, existing plants and animals, and human use of the area.

Formal Definition: The potential of an area to support or develop one or more communities with the potential being dependent on the area's abiotic attributes, its flora and fauna, its ecological processes and disturbances within and upon the area. Source: Wisconsin Administrative Code, Department of Natural Resources, Chapter NR 44.03.

Group campsite- Any campsite authorized for use by groups other than those meeting the definition of a camping party in a family campground as defined by ch. NR 45.

Information facilities- Signs, sign boards, information kiosks and visitor centers for the purpose of providing use or educational formation to the public.

Integrated Ecosystem Management- This is what the master planning process is all about. It's looking at all the pieces that make up the Brule River State Forest, how these pieces fit together, and how we can work together to protect and manage them for the benefit of not only the ecosystem, but the people who rely on and enjoy these resources.

Formal Definition: "A system to assess, conserve, protect and restore the composition, structure, and function of ecosystems to ensure their sustainability across a range of temporal and spatial scales and to provide desired ecological conditions, economic products, and social benefits." Source: May 1995 Wisconsin's Biodiversity as a Management Issue publication.

Management Objective- The desired future condition of the forest. Management objectives are goals that may relate to forest communities, aesthetic conditions, wildlife, or recreation, among other topics.

Management Prescriptions- Directions outlining specific activities that may or may not occur in an area of the forest.

Motorized use- People traveling by use of a motor powered vehicle other than when engaged in management activities or contract operations authorized by the department.

Native surface material- Unprocessed, indigenous road and trail surfacing material.

National Hierarchical Framework of Ecological Units (NHFEU) – An ecological classification system that provides information about ecological resources at different scales, from regional to local.

Natural-appearing- Visually perceived as minimally altered or modified by human actions.

Non-motorized use- Transportation of people by any means other than by a motor-powered vehicle, and the use of motorized vehicles for management purposes by the department and its contractors when engaged in management activity.

Overstory- Trees comprising the main stand or canopy, usually described as the primary type.

Primitive surface material- the natural soil, rock or sand surface existing on roads and trails that developed through use and was not constructed.

Renewable Forest Products- Renewable forest products are things that can be produced over and over again using good forest management practices, such as saw timber, pulp wood, firewood, berries, and boughs.

Restoration- In the context of this document "restoration" means to increase or return species, structures, and processes that are currently diminished locally, regionally, or statewide, to locations on the property that have high capability/potential for both accommodating and sustaining these currently scarce resources. It would attempt to include

missing successional stages and patch sizes. Or, to simply to return forest cover to presently deforested areas.

Rotation- Period of years required to grow timber to a specified condition of maturity.

Seed Tree Cutting- Leaving a residual of scattered trees after cutting to provide a seed source for regeneration.

Selection Cutting- The removal of selected trees throughout the range of merchantable sizes at regular intervals, either singly or in small groups, leaving a uniformly distributed stocking of desirable trees and size classes. (NR 37.03)

Shelterwood Cutting- A partial removal of mature trees leaving trees of desirable species and form to provide shade, seed source and a desirable seed bed for natural regeneration, followed by a final removal of the overstory after adequate regeneration is established (NR 37.03).

Silviculture- The art, science, and practice of establishing, tending, and reproducing forest stands with desired characteristics.

Single unit campsite- A campsite designated for use by families or groups of 6 persons or less.

Succession- Replacement of one plant community by another. An example is the succession from shade intolerant to tolerant plant species.

Sustainable Forestry- Sustainable forestry means managing our forests to meet the needs of people today without compromising the ability of future generations to meet their own needs. This is accomplished by growing, caring for, and harvesting trees for products while at the same time conserving soil, air, water, water quality, and wildlife and fish habitat.

Formal Definition: “The practice of managing dynamic forest ecosystems to provide ecological, economic, social and cultural benefits for present and future generations.” Source: Wisconsin Administrative Code, Department of Natural Resources, Chapter NR 44.03

Thinning- Cutting made in a timber stand to increase the rate of growth and to improve composition of the remaining stand. Thinnings are intermediate cuttings that control the growth of stands by adjusting stand density.

Understory- Trees and other woody species that grow beneath the overstory of a forest stand.

Visitor controls- Regulatory signs, access barriers and regulations, for directing or controlling the behavior of people using department-managed lands.

Visual quality management- Actions to produce or maintain a specific state of landscape aesthetic conditions and minimize or mitigate any negative visual impacts from land management activities or development.

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